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## Selective Heat Treatment of Spring Steel

Variations in Material—Excellent Control Afforded by this System—Experience of One Company During the War

E. P. STENGER\*

**H**EAT treatment is universally recognized as the most important operation in the manufacture of truck and pleasure car springs. The leaf spring, because it is the most highly stressed member in a motor car, requires everything that can be derived from the heat-treating process. Besides carrying a heavy static load, the spring is called upon to stand up under the tremendous impact blows, caused by the ruts and bumps in the road, while at the same time it must be flexible enough to give easy riding qualities.

The aim of the spring manufacturer is to produce a product having definite and uniform physical properties. The spring should possess those physical properties which give maximum life, strength and resistance to impact. To confer upon the spring this special combination of physical properties is the object of heat treatment. By years of study of the behavior of springs in actual road and laboratory tests, the progressive manufacturer has come to know the combination of physical properties which, when imparted to the spring, will yield maximum service.

The important work of seeing that the heat treatment is such that the proper combination of physical properties is imparted to the spring is left in the hands of the metallurgist. Even then and with the aid of the best equipment and instruments, such as pyrometers, furnace and quenching machines, results none too good are ordinarily obtained.

### Variations in Material

If steel of constant chemical composition could be procured, it would be a comparatively easy matter to turn out uniformly a product having all the desired properties, since a standard heat-treatment could then be resorted to. This however is not the case. The steel-maker cannot produce steel of the desired uniformity regardless of how hard he may try. Certain factors connected with the art of steel making are under only partial control. One melt of steel will run high in some elements, while the next melt from the same furnace will run low. Alloy spring steel, even when made by the electric furnace process, will show a variation in composition from one melt to the next, as high as 20 per cent in the carbon content alone, and of all the elements in steel, for like quantities, carbon is the most influential. This variation applies to steel

made in normal or peace times and was greatly exceeded during the war. During that period material of every description had to be utilized in order to maintain production. Even when fortified with priority certificates issued by the War Industries Board, great difficulty was often encountered in obtaining such raw materials as would ordinarily be considered suitable and acceptable. So critical did the situation become that the many industries, which were not considered as being essential for war purposes, had to choose between either closing down or accepting that material which had failed to meet Government specifications. The long accepted material standards, which hitherto had served as a guide, now had to be absolutely discarded.

As an example of conditions existing during the war, the experience of one company is cited. Spring-steel with a carbon content ranging from 0.90 to 1.05 per cent was needed. The only materials obtainable were limited quantities of steel having 0.80 to 0.90 per cent carbon and 1.05 to 1.15 per cent carbon. In other words, instead of the usual 15 points of carbon, a range of 35 points had to be contended with. Reports from good authority had it that some spring-makers were even using steel up to 1.30 per cent carbon.

### How the Situation Was Met

The situation had to be met and it called for a different procedure from that which had heretofore been followed. The manner in which the problem was solved by one of the leading axle and spring-makers will be described herein.

As long as the variation in composition from one melt to the next did not exceed the limits of standard specifications, fairly uniform results were obtained by employing a standard heat-treatment. However, when the shortage of raw materials arose and the variation from one melt to the next became greater, it was impossible to continue to use a standard treatment. A system of selective heat-treatment was then installed. The detrimental effects due to the non-uniformity in chemical composition were overcome by selecting for each of the different melts a heat-treatment which produced the same final result for all. Each melt of steel by this method is given a different heat-treatment, depending on the chemical composition. To make this possible, each melt of steel had to be kept separate from every other melt, from the instant it left the ladle in the steel mills until it was assembled into the finished

\*Thompson & Black, engineers and accountants, New York and Detroit.

| FOR M. M. M. Co. ORDER 76543 ITEM 7 |          | DATE 1/17/18. |                  |      |           |
|-------------------------------------|----------|---------------|------------------|------|-----------|
|                                     |          | Width 274'    | Thickness 2 1/2" |      |           |
| PLATE                               | MATERIAL | MELT NO.      | QUENCH           | DRAW | CHANGE TO |
| 1                                   | C. V.    | 7832          | 1525             | 900  |           |
| 2                                   | C. V.    | 7451          | "                | 1050 |           |
| 3                                   | A. A. D. | 112341        | 1475             | 800  |           |
| 4                                   | "        | "             | "                | 800  |           |
| 5                                   | "        | "             | "                | 800  |           |
| 6                                   | "        | 108673        | "                | 950  | 900       |
| 7                                   | "        | "             | "                | 950  | 900       |
| 8                                   | "        | "             | "                | 950  | 900       |

Fig. 1.—Form Showing the Type of Material and the Heat Number Together with the Quenching and Drawing Temperature for Each Length of Plate in Each Lot of Springs

spring. In this way the chemical composition of each of the many thousands of spring leaves that daily passed through the heat-treating process was known.

In order to reduce the system to a matter of routine, mathematical formulae were derived from each type of spring-steel. When the value of the various hardening elements, such as carbon, manganese, chromium, etc., are substituted in these formulae, the correct drawing temperatures are found. The calculations were made by the laboratory, and the temperatures specified were rigidly followed in shop practice. Fig. 1 illustrates the form used to supply the heat-treater with the necessary information in regard to the temperatures to be used. This form shows the type of material and the melt number together with the quenching and drawing temperatures for each length of plate in a given lot of springs. The type of steel to be used is designated by the engineering department while the melt number is filled in by the man at the shears who observes the melt number painted on the steel entering each length of plate. After this portion of the data has been filled in, the card is sent to the laboratory where the temperatures for the different melts are specified and then to the heat-treater who is guided thereby.

#### Use of Hardness Testing

The Brinell test serves as one of the best checks on the heat-treatment of leaf springs. Although this test can be made quite rapidly, still, because of the many thousand plates, it is not practical to test each leaf. For this reason random testing is resorted to and only a certain percentage of the leaves in each lot are Brinell tested. Fig. 2 shows the form which is used for tabulating the results of the tests made on each melt. It should be noted that the numbers in the different columns are not meant to represent Brinell hardness values, but to represent the number of tests having the hardness numeral as shown in the left hand margin. Thus under date of May 1, four tests showed a hardness of 444, while 20 tests gave a hardness value of 418, etc. When the results of the Brinell tests are summarized in this fashion, it can be seen at a glance whether the drawing temperature is too high or too low. The results on melt 108,673 show that the drawing temperature of 950 deg. Fahr. was too high. On lowering it 50 deg. Fahr., the tests thereafter came well within the limits desired.

An increased cost of operating such a system seemed apparent at the start. The exact composi-

tion of each shipment of steel had to be accurately checked by chemical analysis. Considerable research work was required to develop the formulae for the different types of steel. Also some time was lost in production due to the changing of temperature to suit the different melts.

However, selective heat-treatment is the only method whereby the highest degree of excellency can be conferred upon the finished product. Since the installation of the new system, scarcely any breakage has occurred in service, and the very best results have been reported. This is particularly gratifying in view of the fact that the recent service must have been very severe due to the lack of other means of transportation. It is therefore felt that the increased cost of manufacture is more than justified when an important part like a spring is made more safe.

Selective heat-treatment does not always increase the cost of production. The object of such a system is to produce a more uniform product. This it will do, and where inspection limits are close, the repeated heat-treatments which otherwise become necessary are eliminated. The saving thus effected often more than counterbalances the additional cost, especially when quality is upheld during periods of material shortages.

#### Locating Defective Steel

Through the use of selective heat-treatment it was found that defective steel could be easily discovered and eliminated. Although a check analysis may be made on every melt of steel received, the results thereof may or may not be representative of all the material labeled with that particular melt number. Time after time steel of another type has been found mixed with the spring steel after it had passed the chemical check. The manner in which such unsuitable steel is most frequently discovered and eliminated will be explained in Fig. 2.

Under date of April 26, it will be noted that two of the plates tested showed abnormally low values. Extreme values, such as these, are almost always a positive indicator that steel of another type has become mixed in with the melt prior to the rolling operations at the steel mills. When encountered a check analysis would be immediately made of the material in such plates and the results thereof would very probably show these leaves to be of low-carbon steel. If so, then all such defective steel can be quickly and completely eliminated by a 100 per cent Brinell inspection of the entire melt.

Such an inspection is possible because it is definitely known in what order and in what length of plate the melt can be found. The 100 per cent inspection is not only extended to the work in process which contains this melt, but it is also made to take in that portion of the melt which still remains in stores and has not yet been cut to length.

If, without selective heat-treatment, soft plates, such as shown in Fig. 2, should be discovered by the random Brinell testing, then all would still be darkness, for it would be impossible to tell where the remaining defective steel could be found. About the only result of the discovery in such a case would be to put the manufacturer in the miserable state of mind of knowing that defective steel has entered his product and that he has small chance of eliminating it. However, with selective heat-treatment the

situation is quite different. By knowing the melt from which the defective steel has come, the searchlight can at once pierce the darkness and spot the location of the remaining defective material.

#### Record of One Company

It was indeed surprising to learn the number of melts which contained defective material. Low-carbon steel was found to be the most frequent offender. Of all the sources resorted to during the war the record of only one steel company remained unblemished on this score. It is true that the quantity of the defective steel contained in a given melt seldom represents a very large figure. Still it must be remembered that a leaf-spring is no better than the weakest leaf, and therefore, even if the spring contains but one leaf of unsuitable material, it will have but a short life after entering service. About the most serious case of this nature which has thus far been encountered was that in which about 10 per cent of a large order of springs was found to contain leaves of low carbon nickel steel which was wholly unsuited for spring-making purposes. This particular melt of steel had been supplied at an extremely high price by a steel company of excellent repute.

Another disclosure was made through the use of the selective heat-treating system. It appears that some mills resort to a rather shady practice in disposing of melts which do not conform to standard specifications. This they attempt to do by mixing a small portion (about 25 per cent) of the inferior melt in with bundles of good steel and then labeling the entire lot with the melt number corresponding to the good steel. The theory of such a procedure is that the check analysis by the buyer will in all probability be made on the good steel since that steel constitutes the larger portion of the shipment. This actually happens in the majority of instances, although sometimes the sample for chemical check is taken from the inferior steel. When complaint based on the results of this test is made to the steel mill, they will invariably request that several other samples be tested. Again the chances are that the samples for repeated tests will be taken from the good steel. If such is the case, the steel mill is likely to win the day.

Although the material may pass the check analysis of the buyer, it becomes almost impossible for defective steel to find its way into the finished product, if the selective heat-treating system is in use. The ease of finding defective steel reacts against the steel companies to a considerable extent. Still because it can be definitely pointed out in what melt the slip-up occurs, the responsibility can generally be placed on the shoulders of those who are accountable for the mistake. This feature of the system appeals to those steel producers who are interested in supplying the parts manufactured with the highest quality of material.

The selective heat-treating system grew out of conditions created by the war. However, because of the excellent material control which it affords, this method of heat-treatment is still being used and will be adhered to even when times again become normal. Since the war this system has proved to be of the utmost value in weathering two other emergencies. The first was the crisis brought about by the strike in the steel industry; the second, the re-

| Melt     |   | BRINELL RECORD     |    |          |    |               |    |    |    |    |    |
|----------|---|--------------------|----|----------|----|---------------|----|----|----|----|----|
| Brand    | A.A.D.  | Size 1 1/4 x 1 1/2 |    | Draw 950 |    | Change to 900 |    |    |    |    |    |
| DATE     | 7/25 7/26 7/27 7/28 7/29 7/30 7/31 7/32 7/33 7/34 7/35 7/36 |                    |    |          |    |               |    |    |    |    |    |
| now TEMP | 950 950 900 900 900 900 900 900 900 900 900 900             |                    |    |          |    |               |    |    |    |    |    |
|          |   |                    |    |          |    |               |    |    |    |    |    |
| NUMBER   | 444   | 1                  | 30 | 14       | 10 | 4             | 20 | 18 | 4  | 19 |    |
|          | 418   | 3                  | 8  | 12       | 17 | 10            | 20 | 6  | 15 | 18 | 20 |
|          | 387   | 29                 | 14 | 15       | 8  | 4             | 13 | 4  | 20 | 14 |    |
|          | 364   | 8                  | 10 |          |    |               |    |    |    |    |    |
|          | 342   |                    |    |          |    |               |    |    |    |    |    |
|          | 321   |                    |    |          |    |               |    |    |    |    |    |
|          | Balance   |                    |    |          |    |               |    |    |    |    |    |
|          | 228   |                    |    |          |    |               |    |    |    |    |    |

Fig. 2.—Form for Tabulating the Results of Tests Made on Each Heat. Numbers in columns represent number of tests having hardness figures in first column

cent tie-up of the railroads. Like emergencies will arise in the future, but with such good material control they can be met, with the assurance that the highest quality will be maintained.

#### New England Coal Situation

The resumption of the outlaw railroad strike has seriously interfered with the plans of James J. Storrow to rush coal into New England. The movement of coal into New England cannot be satisfactory unless the movement by water is greatly increased. From the railroad standpoint any increase in the all-rail movement will place an added burden on the New England railroads, which in most cases already have shown their inability to efficiently handle the freight situation. Then, too, the New England railroads are short of fuel, have been practically confiscating much of it consigned to industries, and will actually be obliged to continue to confiscate thousands of more tons if Mr. Storrow cannot check the movement. Even if the coal is shipped into New England via water, the chances are the railroads will satisfy their own demands before industry is allowed to receive all consignments. Water freight rates, on the other hand, are expensive, which makes an added cost to industry's fuel bills.

#### Contracts for Dragline Excavators

WASHINGTON, June 29.—The Secretary of the Interior has authorized the Reclamation Service to award a contract to the F. C. Austin Machinery Co., Chicago, for furnishing one dragline excavator, type "B," at \$7,850; to the Pawling & Harnischfeger Co. of Milwaukee, for six dragline excavators, type "B," at \$65,500, and one type "A" dragline excavator at \$16,750; to the Bucyrus, South Milwaukee, two dragline excavators, type "A," \$36,335; to the Barnett Ranch Lighting & Appliance Co. of Denver, for seven lighting sets for the type "B" dragline and three lighting sets for the type "A" dragline at \$3,950, making a total expenditure for draglines and equipment of approximately \$140,216. Authority was also granted to purchase additional equipment consisting of ten digging and ten cleaning buckets at an estimated expense of \$9,831.

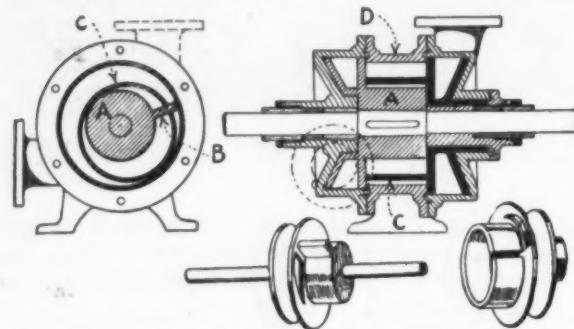
#### Contract for Open Hearths

William Swindell & Brothers, engineers and contractors, Pittsburgh, have been awarded by the United States Navy Department the contract for the erection of two 60-ton basic open-hearth furnaces at the Naval Ordnance plant, South Charleston, W. Va. Work on these furnaces was started June 21. This concern is erecting at the same plant 25 large regenerative forging, heat-treating and annealing furnaces for use in the armor plate department.

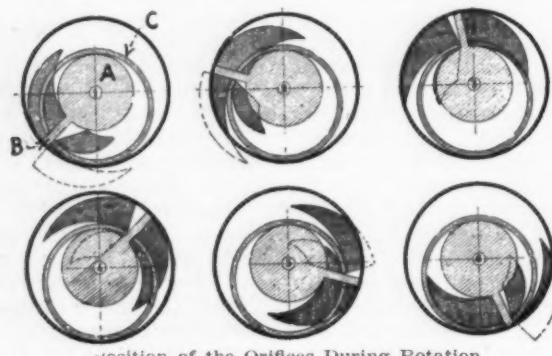
## Rotary Pumps of New Design Built in France

Rotary pumps which employ a new principle in their design and built for small or high pressure are being manufactured by Maurice Poyet, 40, Rue des Petits Champs, Paris. Their capacity of delivery, it is explained, is similar to that of a quadruple acting piston pump; that is, with each complete rotation a double lift and force movement takes place inside the working barrel, proportionately added to one another, creating in this way a continuous delivery.

A cylindrical central part *A* is worked by the driving shaft upon which a board *B* is fixed immovably, the whole revolving concentrically inside cylinder *D*. The board is made so as to be tangent but without rubbing



Cross-Section of Poyet Rotary Pump. With each rotation a double lift and force movement takes place thus to make a continuous delivery



Position of the Orifices During Rotation

inside cylinder *D*. A ring *C* which is split to allow the passage of the board is tangent at two diametrically opposite points—inside the cylinder and outside the central part. The ring *C* revolves around a theoretically fixed axis, and tangents tightly but without rubbing. It is free upon its axis, and nothing interferes with its revolution.

Central part *A* with its board *B* together with ring *C* are the only moving parts. These two revolving parts are each supplied with a lateral cheek intended to limit the cubic capacity of the working barrel, and they carry at the same time special orifices determining the distribution of the liquids inside appropriate lateral grooves. These orifices are closing and opening progressively and automatically during the rotation. There is therefore no lateral valve.

The lateral grooves normally form two supports that bear the rotative axis of the revolving pieces and regulate without shocks or eddies the movement of the liquid flow inside the working barrel.

The lubrication of these pumps is assured in every case when the liquid to be raised is clean, by the liquid itself, which is incessantly renewed, thus preventing the heating of rubbing parts and making a perfect hydraulic joint which precludes all return of the air by way of the shaft or bottoms. Otherwise the pump is grease lubricated.

The pumps are adaptable when the liquid for which they are used contains neither sand nor any solid floating matter. They are reversible and will lift or force liquids, whatever their viscosity or density. They have a practical suction of 8 to 9 meters and when arranged in series an unlimited pressure. A single lifting may

reach 200 meters or more. Average speeds are 300 to 750 r.p.m. They are arranged for stationary use or mounted upon a truck for portable purposes. Small models from 1 to 3 cubic meters per hour are applicable for the distribution of soap water, oil, etc., for machine tools. They are also supplied in series arranged especially for high pressures.

An advantage emphasized also is the possibility of turning into any direction both lift and force pump pipes independently of each other.

## Fluorspar in 1919

Reports received from most of the principal producers of fluorspar, according to Hubert W. Davis of the United States Geological Survey, Department of the Interior, indicate that the total shipments from domestic mines in 1919 amounted to about 122,000 short tons, valued at \$3,102,000 as compared with 263,817 tons, valued at \$5,465,481 in 1918. These figures show a decrease in quantity of 54 per cent and a decrease in value of 43 per cent. The general average price per ton f.o.b. at mines or shipping points for all grades of fluorspar in 1919 was \$25.43, which is \$4.71 per ton more than the average price received in 1918.

The shipments of gravel spar, the grade used principally for flux in the manufacture of open-hearth steel, amounted in 1919 to about 110,000 short tons as compared with 236,121 tons in 1918.

The total quantity of merchantable fluorspar mined in 1919 amounted to approximately 129,000 short tons as compared with 270,412 tons in 1918.

The stocks of fluorspar at mines or shipping points amounted at the end of 1919 to about 25,000 tons as compared with 22,779 tons at the end of 1918.

The decrease in the fluorspar industry in 1919 was generally expected, because a number of steel manufacturers had on hand rather large stocks of spar purchased during the war, and, anticipating lower prices, they curtailed their orders, so that many mines were forced to close. The mining and marketing of fluorspar were further checked by the closing down of steel plants in consequence of the steel and coal strikes.

The imports of fluorspar into the United States in 1919 were 6943 short tons, valued at \$107,631, as compared with 12,572 tons, valued at \$169,364, in 1918, a decrease in quantity of 45 per cent and in value of 36 per cent. The value at the foreign ports of shipment assigned to the imports in 1919 averaged \$15.50 a ton, as compared with \$13.47 in 1918, an increase of \$2.03 a ton.

The shipments of fluorspar in 1920 will probably show a substantial increase over those in 1919, for many operators have reported contracts sufficient to keep their mines busy during most of the year. The steel industry alone will require between 140,000 and 145,000 tons of fluorspar during 1920, if the rate of production of open-hearth steel during the first three months is maintained throughout the year.

The producers of fluorspar in the West have recently been granted lower freight rates to the East.

## Coal Car Order Cuts Pig Iron Output

In reviewing the pig iron market for the week ending June 26, the Matthew Addy Co., Cincinnati, comments as follows on the order of the Interstate Commerce Commission that 100 per cent of open top cars be returned to the mines for reloading with coal:

The Interstate Commerce Commission dropped a bombshell into the iron trade this week by prohibiting the use of open top cars except for the coal trade. The coal situation is desperate, but the remedy proposed is a good deal worse than the disease. Modern iron furnaces receive their ore, their coke and their limestone in open top cars. There is not any way of loading these raw materials except in open top cars. Pig iron is loaded direct from the casting machine or by magnets, and open top cars are the only equipment that can be used. This order if rigidly enforced will shut down half the iron furnaces in the country within a week. It is simply impossible for us to believe that the Interstate Commerce Commission actually proposes any such extreme and drastic procedure. However, if this order is carried out literally, production of pig iron will fall off more than 50 per cent within a week.

# Freight Rates on Iron Ore Discussed

## Proposal of Jones & Laughlin Steel Co. Strongly Opposed by Other Companies—Relationship Between Lake and Interior Furnaces Declared Unjust and Discriminatory

WASHINGTON, June 29.—Freight rates on iron ore occupied the attention of the Interstate Commerce Commission throughout Saturday's hearing. The various interests which would be affected by the advance in these rates proposed as part of the general increase designed to enable the railroads to earn 6 per cent on their property value were given an opportunity to present their varying views.

Discussion centered chiefly upon a proposal presented by W. W. Collin, representing the Jones & Laughlin Steel Co., Pittsburgh, that the advance in rates on ore be accomplished by increasing the existing rates by specific amounts in order to preserve existing differential relationships between furnace points. This recommendation was opposed by representatives of Lake furnaces, the ore carrying railroads and others. Ernest S. Ballard, counsel, and Robert Hula, assistant traffic manager, of the Steel & Tube Company of America, who presented the case of that company and the By-Products Coke Corporation, with respect to the increases in rates on ore from the mines in the Lake Superior region to lower Lake port and interior furnaces, objected to present rates and proposed increases. A. A. McLaughlin and A. W. Dynes represented the ore carrying roads, the Chicago, Milwaukee & St. Paul, the Chicago & Northwestern, the Duluth, South Shore & Atlantic and the Minneapolis, St. Paul & Sault Ste. Marie.

### Object to Increases

Jean Paul Muller appeared as counsel for two groups, both of which objected to any further increase in the rates on iron ore. One of these groups included five blast furnace operators, the Cleveland Furnace Co., the Detroit Furnace Co., the McKinney Steel Co., the Otis Steel Co. and the Toledo Furnace Co. The other group consisted of 69 iron ore mining companies operating in Minnesota, Wisconsin and Michigan and composing the Lake Superior Iron Ore Association.

Another group which protested against increases in iron rates from mines to upper Lake ports and from lower Lake ports to furnace points in the Mahoning and Shenango Valleys included the Republic Iron & Steel Co., the Youngstown Sheet & Tube Co., the Brier Hill Steel Co., the Sharon Steel Hoop Co., the Shenango Furnace Co. and the Trumbull Steel Co. Their protest against rate increases was read to the commission by Traffic Manager Rhodehouse of the Youngstown Chamber of Commerce.

James P. Daly of the Donner Steel Co., Inc., appeared in behalf of his company and the Lackawanna Steel Co., Rogers-Brown Iron Co., Buffalo Union Furnace Co. and the Wickwire-Spencer Steel Corporation. These companies, located in or near Buffalo, are engaged in the manufacture of pig iron and steel products and get their supply of iron ore from the Lake Superior region. Mr. Daly suggested taking the rates prior to June 25, 1918, as a basis upon which to apply a uniform percentage increase.

### View of Southern Companies

James Bowron, president of the Gulf States Steel Co., Birmingham, Ala., appeared for a group of southern steel companies, including the Sloss-Sheffield Steel & Iron Co., the Alabama Co., the Republic Iron & Steel Co., the Woodstock Operating Corporation and the Sheffield Coal & Iron Co. Mr. Bowron said that while his companies wished to support any just and equitable advance in freight rates, he believed that inequalities in the present rate system, due especially to what is known as general order No. 28 of the Railroad Administration, should be corrected.

The Jones & Laughlin proposal for a specific in-

crease in iron ore rates instead of a percentage increase was summarized by Mr. Collin as follows:

"The petitioner proposes that the advance in rates now pending before the commission be accomplished by increasing the existing rates by specific amounts in order to preserve existing differential relationships between furnace points. It is further proposed that the increase so collected from the shippers be distributed among the several carriers through the medium of divisions so fixed as to give the several carriers a percentage increase over present earnings.

"For brevity the terms 'northern lines,' 'rate north' and 'division north' are used to refer to the transportation from mines to Lake Superior ports; the terms 'southern lines,' 'rate south' and 'division south' refer to the transportation from Lake Erie ports to destination furnace points; the term '1917 rates' refers to the rates in effect in 1917 and until June 25, 1918, when the 25 per cent general advance was effective; the term '1918 rates' refers to the rates under the 25 per cent advance; and the terms '1920 rates' and '1920 divisions' refer to such rates and divisions as may be made effective as a result of this proceeding.

### Increase by Specific Amount

"The proposal is that the 1917 rates be increased by a specific amount, 74c. per ton; that this specific amount be added to the 1917 rates of the northern lines; and that the increase in rates so collected from shippers be distributed between the lines north and the lines south by divisions, to be stated in division sheets in the usual way, and settled between the carriers by interline settlements according to the usual practice for through rates.

"It is proposed that the through rates, thus advanced by specific amounts, shall be divided so as to give each line its due percentage increase.

"The total revenue of the southern lines at 1917 rates was \$24,054,163; the increase under the 1918 advance (\$8,151,689) and the 1920 advance (\$9,661,756) make a total of \$17,813,445 or a percentage increase of 74.05 per cent.

"It is therefore proposed to divide the rates with reference to a percentage increase of 74 per cent in the southern lines revenue.

"It is wholly practicable to treat the entire rail movement, north and south, as a joint haul, and for the southern lines to bill against the particular northern line that handled the ore to the upper Lake port. The vessel bill of lading shows the northern line that hauled the ore to the dock, the northern port used and the origin of the ore. Copy of the vessel bill of lading is currently furnished the dock superintendent at the lower Lake port. Whether the ore is handled 'direct' or 'dock' at the lower port, its identity, as regards the origin and the northern line that handled it, and the upper port through which it moved, is not lost; and it is possible for the billing clerk at the lower port to enter on the way bill the origin of the ore, the northern road handling it, and the northern port through which it moved. This is all that is necessary for the southern roads' auditor to make out settlement sheet against the northern road."

Replying to this suggestion, attorneys for the ore carrying roads presented a formal brief, an extract from which follows:

### Opposed to Jones & Laughlin Plan

"The above named carriers deny that the advance in ore rates should be accomplished by increasing the existing rates by specific amounts. They show that their interest in the transportation of the ore in ques-

tion terminates when such ore is placed in vessels at their docks, which vessels are not subject to the jurisdiction of the Interstate Commerce Commission. They further show that there is no obligation of law on their part to maintain any relationship in rates to furnaces located at Lake ports and in the interior. They further call attention to the fact that their services are identical whether the ore is consumed at the Lake ports or at interior furnaces, and that they are not interested in whether or not there be a second rail haul after such ore has left their possession.

"And further answering they deny that the question of divisions of rates between carriers is before the commission in this proceeding, and show that any attempt to make in this proceeding the suggested divisions would be contrary to the requirements of the act to regulate commerce as amended."

The roads denied that conditions surrounding the traffic are such as to make practicable the divisional settlement suggested.

"In so far as the lines serving Ashland and Escanaba are concerned," says the brief, "the plan contemplates that there shall be collected \$1.20 per gross ton and that when, if ever, the ore is transported further by rail, there shall be refunded from this collection amounts running from \$1.20 per ton as a maximum to 43½c. per ton as a minimum, depending upon the final destination of the ore. This means that for an identical service the western carriers to Ashland and Escanaba would have 14 separate rate bases ranging from nothing to \$1.20 per ton. This means that subsequent to the advance to be granted as a result of this proceeding, the lines north would actually receive a total revenue on iron ore which would be less than they are now getting under present rates.

"Attention is called to the fact that much tonnage at times is placed in stock piles at the lower Lake ports and does not move to the furnaces for several years, the effect of which would be that the western carrier, years after its service had been completed and account closed, would be required to refund large sums of money.

"The carriers further show that since the Interstate Commerce Commission has no jurisdiction over the vessel carriers they cannot require that such carriers certify to the southern carriers either the points of origin or the names of the western lines by which the traffic originally moved."

#### War Emergency Measure

Mr. Ballard and Mr. Hula, appearing for the Steel & Tube Company of America, with blast furnaces at Indiana Harbor, Ind., and South Chicago, Ill., and the By-Products Coke Corporation, with a blast furnace at South Chicago, said that the present iron ore rate relationship between lower Lake port and interior furnaces, growing out of the rates of \$1 to the head of Lake Superior and 97c. from lower Lake ports, was when it was established on June 25, 1918, unjustly discriminatory between the two classes of furnaces, being unreasonably prejudicial to the lower Lake port furnaces. It was stated that these companies accepted the rates as a war emergency measure, but that now the inequality should be corrected. They declared that to make a percentage advance in the rate of \$1.00 to the head of Lake Superior and in the rate of 97c. from lower Lake ports would perpetuate the "existing unjust, unreasonable, unjustly discriminatory and unlawful relationship between lower Lake port and interior furnaces."

Their proposal was as follows:

"That the unjust, unreasonable, unjustly discriminatory and unlawful relationship between said two classes of furnaces now existing should be cured by distributing the said increase of June 25, 1918, between the June 24, 1918, rate to the head of the Lakes and the June 24, 1918, rate from lower Lake ports; that the said readjustment should be made either by dividing the advance of 36.5c. in the rate to the head of Lake Superior between the said rates (advancing the June 24, 1918, rate to the head of Lake Superior 14.5c. and the June 24, 1918, rate from lower Lake ports 22c.) or by substituting for the said flat advance an advance of

25 per cent in the June 24, 1918, rate to the head of the Lakes and a similar advance of 25 per cent in the June 24, 1918, rate from lower Lake ports.

"That after having distributed said advance of June 25, 1918, as hereinbefore set forth, this commission should permit such further percentage advances in the rates to the head of the Lakes and the rate from lower Lake ports as may be justified and required by the evidence produced in this proceeding.

"That if the advance of June 25, 1918, should be readjusted in either of the ways hereinbefore set forth and the commission should thereafter grant to the carriers to the head of the Lakes an increase of 24 per cent and to the carriers from lower Lake ports an increase of 30 per cent, it would produce a rate to the head of Lake Superior of \$1 and from lower Lake ports to the Pittsburgh district of \$1.53 or \$1.56; that the relationship between lower Lake port and interior furnaces produced by the said rates would be just, reasonable, non-discriminatory and lawful."

#### Position of Lake Companies

In a petition presented by Mr. Muller for the Cleveland Furnace Co., the Detroit Furnace Co., the McKinney Steel Co., the Otis Steel Co. and the Toledo Furnace Co., it was declared that before there is any further advance in ore rates the increase of 33.6c. per ton which became effective June 25, 1918, under general order No. 28 should first be removed to restore the relationship existing prior to that time. That increase, it was contended, deprived these companies of advantages attaching to the geographical location of their furnaces on the Lake front.

On behalf of the iron ore mining companies operating in Minnesota, Wisconsin and Michigan, Mr. Muller objected emphatically to any increase in iron ore rates from their mines to the upper Lake ports on the following grounds:

1. Because the iron ore rates applied to their shipments prior to June 25, 1918, were grossly excessive.

2. Because the application of specific increases per ton under general order No. 28, effective June 25, 1918, has produced still more excessive rates on iron ore.

3. Because the iron ore rates now in effect, and any increases therein, increase the revenues of a few iron ore carriers, who do not need the additional revenue, while the inclusion of the investment and revenue figures of these same iron ore carriers in a general tabulation of the western rate district upon which this commission would calculate a percentage increase in rates on other commodities for application on the lines of all the carriers in the western district would produce an erroneous result to the disadvantage of over 90 per cent of the general commodity carriers who are not benefited by the excessively high iron ore rates.

4. Because every addition to these iron ore rates in excess of a just and reasonable rate for the service rendered automatically increases, needlessly, but nevertheless substantially and progressively, the cost of all iron and steel articles which must be purchased by all the railroads, not the ore carriers only, for inevitable maintenance and increase in plant and equipment. These avoidable additional costs would still further increase unnecessarily the present high operating expenses and add further values, created by the rate increase, to the plant and equipment account, requiring almost immediately further increases in general freight rate levels to meet the increased costs."

#### Old and New Rates Unreasonable

The Republic Iron & Steel Co., the Youngstown Sheet & Tube Co., the Brier Hill Steel Co., the Sharon Steel Hoop Co., the Shenango Furnace Co. and the Trumbull Steel Co., which are both owners of iron ore mines in Minnesota, Wisconsin and Michigan and receivers of iron ore received ex-Lake from Lake Erie ports to their furnaces in the Mahoning and Shenango valleys in Eastern Ohio and Western Pennsylvania, declared in their petition that the rates prior to June 25, 1918, were unreasonable and those in effect at present are even more so. It was asserted that the proposed increase would become an "unbearable tax upon the ore itself."

In the case of the lower Lake rates it was declared that the proposal of the carriers to increase existing rates from lower Lake ports to furnace points in the flat sum of 22c. per gross ton to all consuming points, regardless of distance, and upon that to add an increase of 30 per cent would deprive furnaces located near lower Lake ports of the advantage of their geographical location. It was stated further that the proposed increase would give the roads more revenue than they have asked for in their general application. These companies favor, if any increase is held to be necessary, a percentage increase only.

Mr. Bowron, speaking for the Alabama steel companies, said that each advance in freight rates auto-

matically removes the Alabama mineral district further away from its markets, except alone in the case of export business. He contended that the most equitable way to handle the situation would be to establish as the reasonable rates under general order No. 28 a flat advance of 25 per cent upon the rates existing prior to June 25, 1918, and then add to the rates so established such general advance as the commission may find to be justified. Mr. Bowron said the pre-war pig iron freight rate to Chicago from Birmingham was \$4 a ton and now it is \$5. He said a 30 per cent advance would make a rate of \$6.50, which he thought would prove a barrier causing the Alabama companies to lose a large amount of business.

O. F. S.

## An Old Shaft Forging of Malleable Iron

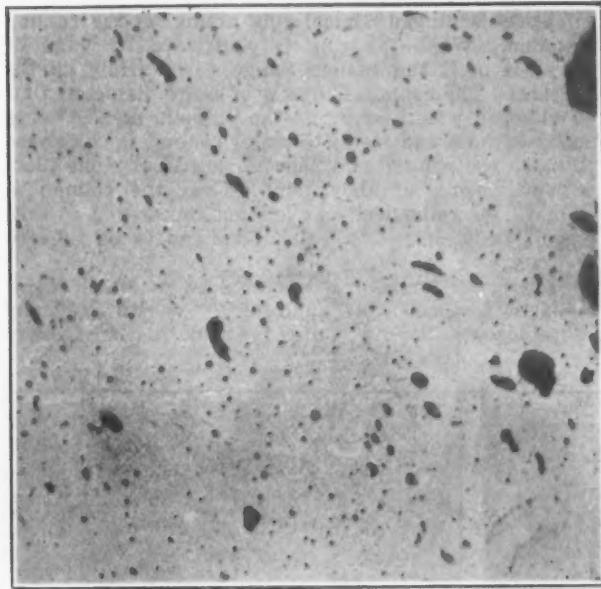
Built Up From Four Bars Welded Together in Pairs  
—Unusual Workmanship Shown by the Microscope

SOME interesting data on an old shaft forging of malleable iron are presented in the *Journal of the West of Scotland Iron and Steel Institute* in its January-February issue by Colin Livingstone, Langloan Iron Works, Coatbridge. The results of a recent examination of this forging are given as follows:

Nothing is known of its origin, but it is believed to be very old, and to have formed a center for a beam engine, or possibly the rocking shaft for a bell crank

dimensions were reached. It says much for the workmanship of those days that only such a small portion of the forging, about 4 in. in length, showed any signs of the way in which it was built up. Eight samples were taken at different points on a section, as denoted by the spot numbers, and the results of the analyses of those samples are given in the table.

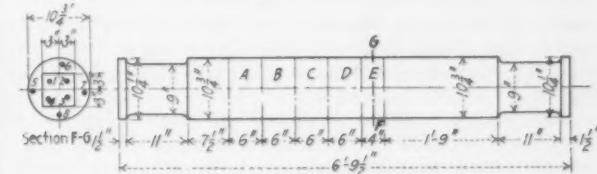
Prof. C. H. Desch has made a microscopical examination of one of the discs cut from the shaft, and re-



of an old pit pump. For the last 20 years it has been kept as emergency stock. Some pieces of steel of the diameter of the shaft being required and delivery being very uncertain owing to the railroad strike, it was decided, the job being an urgent one, to cut pieces from the old shaft.

The drawing shows the size of the forging and the position of the pieces cut out. The pieces A, B and C were solid, but when the piece D was cut off lines of division were seen. Some thin slices were then cut from one end of E. The other end of E showed a faint hair line, but was almost solid. The shaft had no keyways and anything fixed to it must have been held by stakes instead of keys.

An examination of the slice cut from the shaft shows that it was built up, the plant available at the time when it was made being evidently insufficiently heavy to work a forging of that size. The shaft is built up of four single bars, each 3 in. square, first welded together in pairs, making two bars each .6 in. by 3 in. These bars were then welded together again to form a square bar 6 in. by 6 in., and other material was then welded on to the outside until the requisite



The Drawing Shows the Size of the Forging and Position of the Pieces Which Were Cut Out

The Photomicrograph Is from a Transverse Section of the Forging at 50 Diameters

The Analysis of the Eight Samples from the Forging Are Also Given in the Table

| NO. OF DRILL HOLE | ANALYSIS |       |       |       |       |       |       |       |
|-------------------|----------|-------|-------|-------|-------|-------|-------|-------|
|                   | 1        | 2     | 3     | 4     | 5     | 6     | 7     | 8     |
| Combined Carbon   | Trace    | Trace | Trace | Trace | Trace | Trace | Trace | Trace |
| Silicon           | 0.169    | 0.254 | 0.188 | 0.301 | 0.141 | 0.147 | 0.132 | 0.160 |
| Sulphur           | 0.043    | 0.034 | 0.037 | 0.044 | 0.026 | 0.026 | 0.034 | 0.034 |
| Phosphorus        | 0.35     | 0.48  | 0.43  | 0.29  | 0.30  | 0.36  | 0.27  | 0.45  |
| Manganese         | 0.009    | 0.013 | 0.013 | 0.012 | 0.005 | 0.009 | 0.011 | 0.009 |

ports that the method of building up is very clearly shown on etching, the banding of the separate bars being very distinct. The cinder lines are seen in transverse section in the photomicrograph, taken under a magnification of 50 diameters. Higher magnification after etching shows the iron to be remarkably pure. The merest traces of carbide are to be seen and the whole mass consists of ferrite grains of varying size.

The American Metal Products Co., Milwaukee, has increased its capital stock from \$100,000 to \$300,000. It has purchased a six and one-half acre tract of land on Burnham Street and will erect a modern foundry 80 x 220 ft. It plans for construction later of a rolling mill in which it will roll rods, strips, sheets, etc., of "Ampco" metal, an aluminum bronze alloy made in various grades to meet engineering requirements. One grade is exceptionally resistant to the corrosion of acid and is in demand among steel mills and chemical plants. The company has been established four years and is enjoying a rapid growth, this year's business showing an increase of over 300 per cent over the same period last year.

## NEW RADIAL DRILL

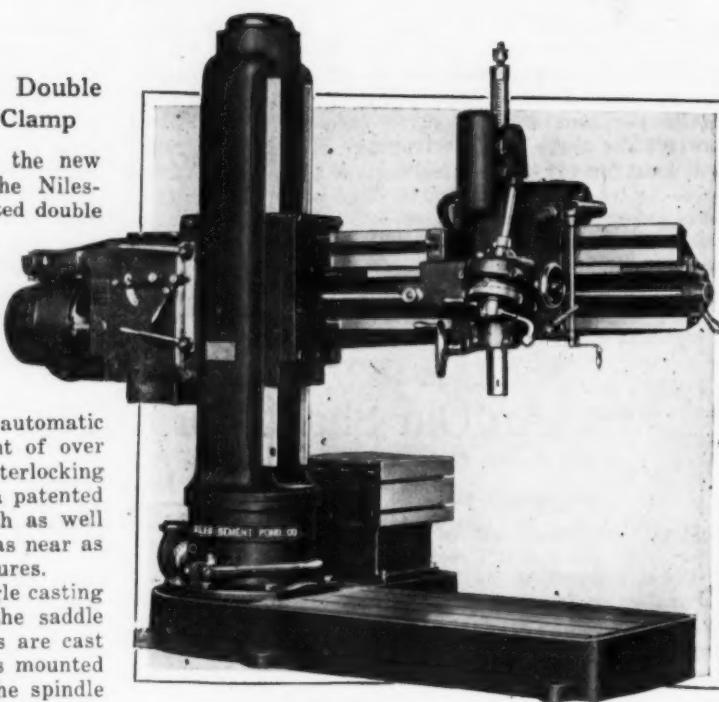
### Noteworthy Construction Having a Double Beam Section Column With Electric Clamp

Probably the most decided departure in the new radial drill which has been produced by the Niles-Bement-Pond Co., here illustrated, is a patented double column. Besides increased rigidity, it is emphasized that in the direct drive secured, four gears and a double-faced bevel pinion suffice for the transmission of power from the driving motor to the spindle. Other features include an electric clamping of the column, controlled from the head of the machine and utilizing, of course, the general power source for the machine. An automatic safety stop to prevent accidents in the event of over travel in the arm is provided and an interlocking of the elevating and clamping mechanisms; a patented arm section to secure high torsional strength as well as an application of the drive to the spindle as near as possible to the drill are also among the features.

As indicated in Fig. 1, the column is a single casting formed of two box section members with the saddle arm mounted between them. These members are cast integral at the top and bottom. The motor is mounted on the back of the saddle arm and drives the spindle through a single horizontal shaft running between the column members, resulting, it is pointed out, in the elimination of two-thirds of the usual driving gears and shafts. The column rotating with the arm, bending stresses in the column are always in the direction for which the section is designed. To give additional support to the column, the trunnion or circular part extends through to the bottom of the base as shown in Fig. 2.

The double column construction allows for using V-type tracks at the front and back for guiding of the arm saddle, so that when clamped the arm and column may be regarded as forming a rigid unit.

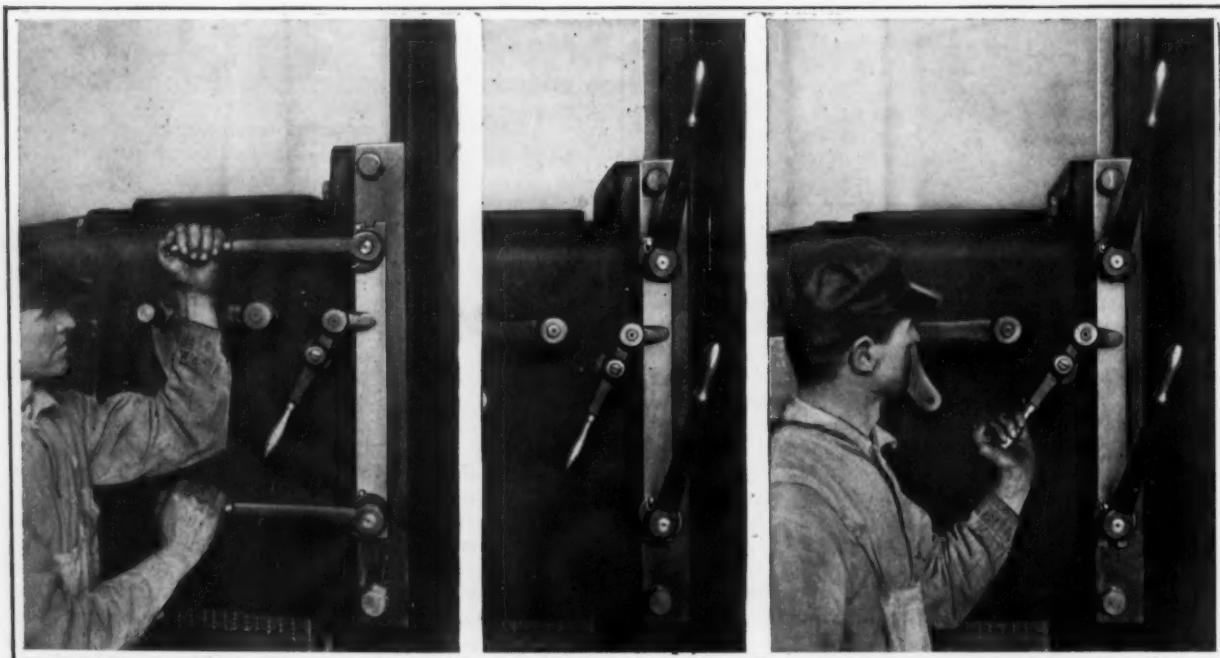
The clamping of the column to the pedestal may be effected instantly, it is emphasized, by means of the motor operated device. This is shown in one of the accompanying illustrations. The operator may engage or disengage the clamp without leaving his working position by throwing a switch located on the drill head.



Five-Foot Right Line Radial Drill

A lever for clamping by hand is also provided. From Fig. 2 it will be noted that the clamping mechanism comprises a hinged conical ring acting on the column trunnion. When the ring is contracted by hand or power it pulls the column flange down firmly on the pedestal. The column flange is of large diameter, thus providing a wide bearing on the pedestal so that when clamped the broad metal to metal contact is calculated to make the column and pedestal practically one piece without spring at the joint. When the column is clamped the roller bearings are not counted on to take any of the bearing strains, but instead to be relieved of them.

The electric clamp is operated by a small motor through a worm wheel and nut. As stated, being operated by electricity, it uses the same source of power



ARM CLAMPED

ARM UNCLAMPED

ELEVATING MECHANISM ENGAGED

The elevating clutch lever is connected to a link carrying two pins, as shown above. In the first illustration the arm is clamped and these pins bear against the bosses of the clamping levers preventing the elevating clutch lever from being moved. Raising the levers to unclamp the arm brings the two slots in the bosses below the pins, as shown in the

center illustration. The elevating clutch can then be thrown in, as shown in the illustration to the right, the pins passing down into the slots and locking the clamping levers. Thus in the same way the elevating lever must be thrown out again before the clamping levers can be brought down to clamp the arm.

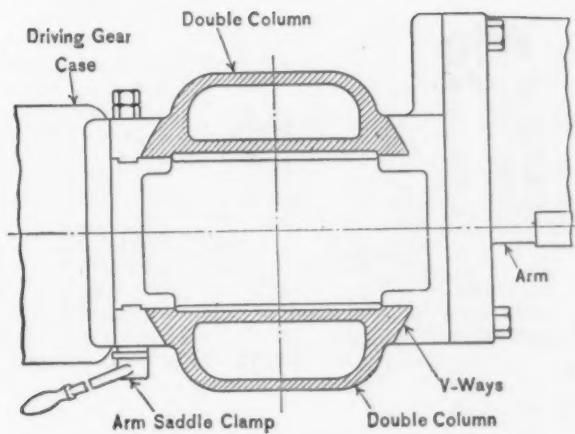


Fig. 1.—Cross-Section of New Patented Double Column

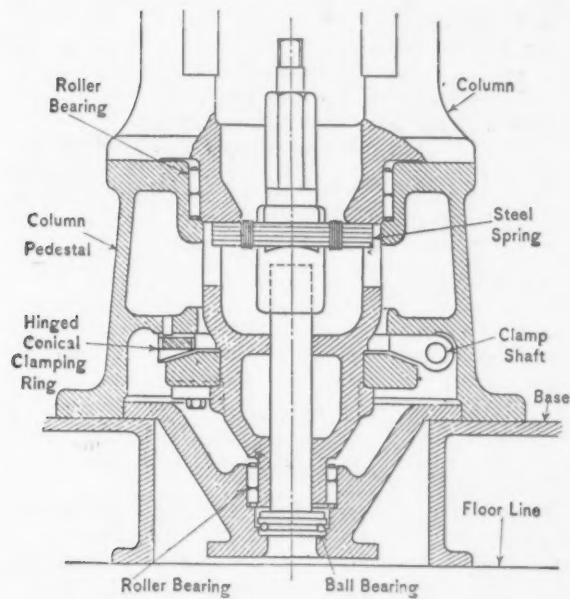


Fig. 2.—Column Extends Through the Pedestal to the Bottom of the Base to Give Additional Support

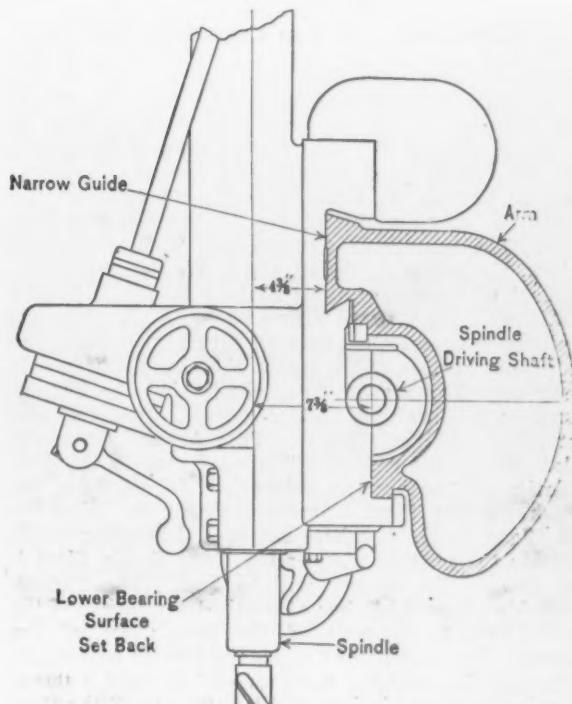


Fig. 3.—Lower Bearing Surface of New Patented Arm Is Set Back of the Upper Narrow Guide to Bring the Spindle Driving Shaft as Close as Possible to the Spindle

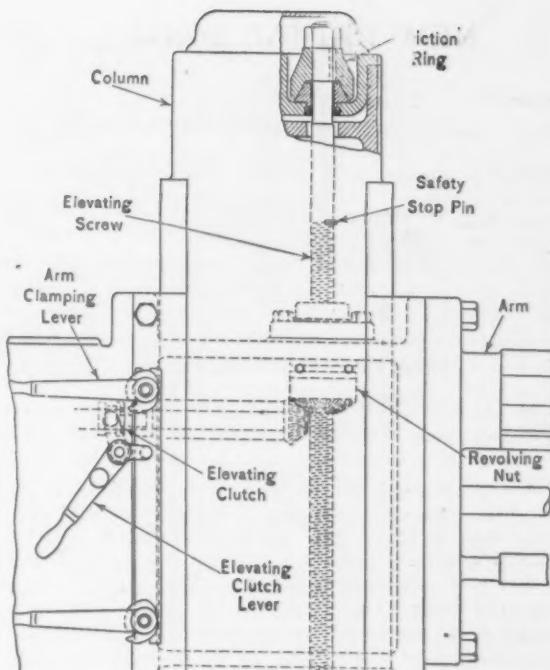


Fig. 4.—Arm Elevating Mechanism and Automatic Arm Stop

as the driving motor, and no consideration need be given to a supplementary power supply such as compressed air.

In swinging, the weight of the arm and the column is supported by a ball bearing at the bottom with roller bearings for taking the side thrust. The ball bearing is located almost directly under the center of gravity, a fact which contributes to the ease of rotation. When the clamping mechanism is relieved, the steel springs shown in the illustration lift the column a few thousandths of an inch so that the column flange clears the pedestal and friction at this joint is thus eliminated, leaving the arm and column to turn on the ball and roller bearings.

A section of the patented arm is shown in Fig. 3. It has an upper narrow guide for the saddle, and the lower part is set in a plane back of the front surface. This construction serves to bring the driving shaft close to the spindle and to give depth from the front to the back of the arm, and, therefore, for a given amount of metal an arm of maximum stiffness. Tests show, it is stated, that under heavy bearing strains the deflection of the arm and column structure is practically negligible.

To illustrate the interlocking arm elevating and clamping mechanisms, Fig. 4 and the reproduction of



The Electric Column Clamp

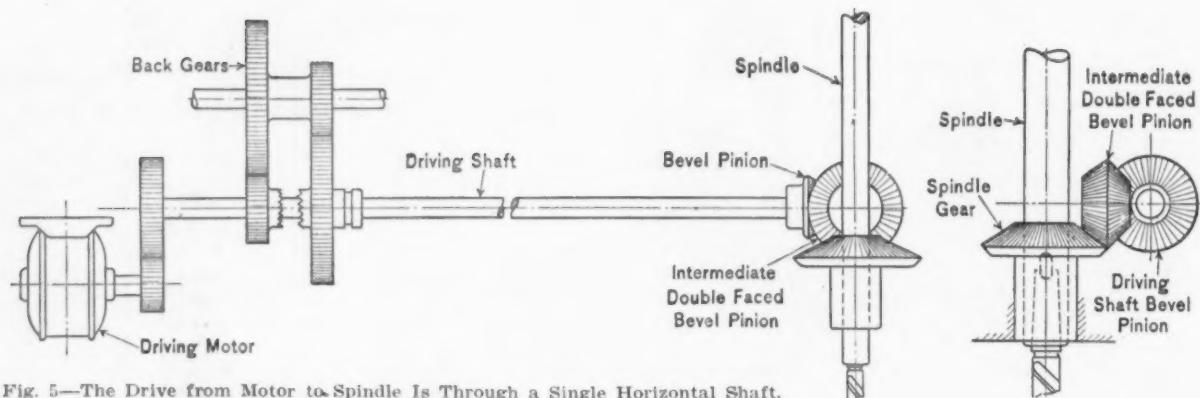


Fig. 5.—The Drive from Motor to Spindle Is Through a Single Horizontal Shaft, Four Gears and One Double-Faced Pinion

the photographs will serve. The driving motor operates through a stationary elevating screw and revolving nut in the arm saddle. The mechanism is engaged by throwing a clutch lever located on the driving gear box, and is started and stopped by a controller handle on the drill head. The elevating mechanism cannot be engaged until the clamp is relieved, nor can the arm be clamped until the elevating mechanism is disengaged. Should the operator carelessly run the arm to the limit of its travel at either the top or bottom, the revolving nut comes in contact with a pin on the screw, causing the screw to turn and thus bringing the arm to a stop. Similarly, when the spindle or arm meets an obstruction in lowering, the elevating screw is lifted and turns freely, thus stopping the arm.

Fig. 5 is shown to point out the simple drive which the double column construction makes possible and lends weight to the claim that a high percentage of the motor horsepower is delivered to the spindle. The gears for direct drive consist of two spur gears at the motor end and two bevel gears and an intermediate double-faced pinion in the drill head. The back gears are located in the gear case and run in oil.

There are eight positive geared feeds which are changed by means of a disk graduated to show the feed for each position. The driving mechanism may be reversed for tapping work and the motor may be slowed down, thus to secure exact depth without difficulty and with accuracy. A depth gage with automatic feed trip is provided.

## STEEL PLANT AT SEATTLE

### First Unit Soon to Be Built—Blast Furnaces Included in Plans

SEATTLE, June 26.—The Western Rolling Mills Corporation, of Seattle, has purchased a tract of 63 acres in the southern city limits, on which will be erected the first unit of a plant for the manufacture of steel and steel products. The site acquired has a 30-ft. right of way from the plant location to the Duwamish Waterway, giving the company transportation by both rail and water. The first unit of the plant to be built will cost about \$1,000,000, while plans prepared for the completed plant, with blast furnaces at the mines and all equipment, represent an outlay of approximately \$15,000,000.

The initial unit of the company, work on which will proceed immediately, will consist of one electric furnace and one open-hearth furnace, but buildings sufficient to house the completed steel plant will be erected at this time. These structures will include three buildings paralleling each other adjacent to the railroad tracks, the mill building to be 540 x 85 ft. Adjoining it will be two smaller buildings, one 240 x 50 ft., and the other 250 x 40 ft. The first unit will have capacity of 50 to 100 tons daily, and will employ about 300 men. All machinery and equipment in the plant will be electrically driven.

The later units to be constructed will provide an output of 300 to 500 tons daily, and will include a merchant bar rolling mill, consisting of three open-hearth furnaces; two ingot continuous furnaces, one billet continuous furnace, one breakdown mill, 12-in. merchant mill, electric conveyors, machine shop and electric furnaces for special steel.

The company has control of hematite ore deposits near Bellingham, Wash., estimated to contain 100,000,000 tons of ore, and of ore deposits in British Columbia of almost equal value.

The company is headed by J. Johnson, president, an experienced steel man, who obtained his knowledge and working experience in steel at the Riga Iron Works, Riga, Russia, and who has been employed in steel

plants of Germany and Switzerland. J. M. Price is vice-president and Frederick Bruhn is secretary-treasurer of the concern. City offices are now maintained at 401-403 Pacific Block.

The company expresses the conviction that Seattle as a geographic location has a distinct advantage over other locations, and points to the fact that steel and steel products alone exported from the Port of Seattle last year approximated \$37,000,000. Officials of the company declare that one Japanese importer has offered to contract for the entire output of the mill for six months if date of delivery can be guaranteed.

### The New Canadian Consolidation

TORONTO, ONT., June 29.—It is now announced that the meeting of the Dominion Steel Corporation, which is to consider the merger proposals, will be held at Sydney, N. S., and not as in former years in Montreal, Que. During the past three days a special committee, composed of Col. W. Grant Morden, chairman of the London advisory committee; Roy M. Wolvin, president of the Dominion Steel Corporation; Hon. Frederick Nichols, Sir Henry M. Pellatt and J. W. Norcross, vice-president of the corporation; Stanley E. Elkin, M. P.; H. B. Smith, Sir Clifford Sifton and J. F. M. Stewart, have been in consultation over the terms upon which the smaller enterprises are to enter the consolidation. It is now generally regarded as definite that the Canada Foundries & Forgings, Ltd., Montreal, Que., and the Port Arthur Shipbuilding Co., Port Arthur, Ont., will be left out of the merger. The next step in the consolidation of the various enterprises to comprise the British Empire Steel Corporation will be taken at New Glasgow, N. S., where the special meeting called to ratify the participation of the Nova Scotia Steel & Coal Co., in the merger will be held. The Canada Steamship Lines, Ltd., has also called a meeting of the shareholders to approve of the acquisition of the Montreal Transportation Co., by the former enterprise. Following this another meeting will be held to pass upon the recommendations of the directors of the Canada Steamship Lines that both properties form part of the British Empire Steel Corporation, on the terms already announced.

# Important Labor Conference at Columbus

## Effort to Avert Suspension of Sheet and Tinplate Mills—Vital Issue Raised at Atlantic City Conference—Manufacturers Opposed New Memorandum

YOUNGSTOWN, OHIO, June 29.—That issues of extreme importance to a large section of the iron and steel industry were brought to the surface at the annual wage conference earlier in the month between the Amalgamated Association of Iron, Steel and Tin Workers and the manufacturers at Atlantic City is a belief confirmed by developments of the past few days. To avert, if possible, a suspension in the sheet and tin plate divisions of the industry which operate under the Amalgamated Association agreement, a second conference to discuss primarily the wage rate in rolling mills opened Monday, June 28, in the Hotel Deshler, Columbus. This conference was arranged by James H. Nutt, secretary of the National Association of Sheet and Tin Plate Manufacturers, and M. F. Tighe, president of the Amalgamated Association. If it is possible to agree on a wage scale for the calendar year ending June 30, 1921, an effort will be made to prevent suspension of the mills affected, either by action of the manufacturers or the employees, until questions of policy embodied in the contract are worked out. Five of the six days of the Atlantic City conference affecting the sheet and tinplate divisions were devoted to a consideration and discussion of the "memorandum of agreement," which outlines the policy of the Amalgamated Association with respect to organizing other branches of the industry. The sheet and tinplate conference adjourned with comparatively little discussion on the wage scale. Through its wage committee the Amalgamated Association asks a 20 per cent advance on the base rate for affected employees, which is considered excessive by manufacturers in view of the high wages now being paid sheet and tin workers. At Atlantic City the Amalgamated Association also presented a demand for a 6-hr. day in tin mills, which was later withdrawn. No demand was made for a reduction of the working day in sheet mills, which, like tinplate units, operate on an 8-hr. turn, or three shifts every 24 hours.

### Bar Iron Wage Scale

Immediately following adjournment of the sheet and tinplate conference, manufacturers conferred with representatives of the men to fix the bar iron wage scale for boilers and muck mill hands for the ensuing year. This agreement has been renewed with little or no friction for many years by the Western Bar Iron Association and the Amalgamated. An understanding was reached on the wage scale, but disagreement resulted when the Amalgamated representatives attempted to embody in the document a memorandum of agreement identical with that which was proposed to the sheet and tinplate manufacturers. Heretofore there has not been such a section in the contract with the Western Bar Iron Association.

In their wage demands the men asked for a flat 15 per cent advance in the base rate, and an additional increase of 15 per cent on the boiling rate per ton of 2240 lb., based on a 1.50c. card for bar iron and all above. The last bi-monthly settlement was based on a 3c. card and fixed the wages of puddlers for the May-June period at \$14.88. Under the new agreement the base is to remain unchanged up to a wage rate of \$7.63, based on a 1.50c. card, when the boiling scale is advanced approximately 10 per cent, with the same differential for all higher rates. Under this arrangement the puddling rate on a 3c. card would be \$16.02 instead of \$14.88. This advance applies to muck and puddle mills, bar and 12-in. mills, and to busheling on cinder bottom, busheling on sand bottom, knobbling, heating slabs and shingling and to piles on boards.

For workers in guide, 10-in., hoop and cotton mills, a 10 per cent advance at a 1.50c. card was agreed upon,

and then an additional 5 per cent increase on all sizes below base sizes until they get down to 5/16-in. rounds and sizes taking similar rates, when there is another 10 per cent advance. Employees in such mills are now paid 97 per cent above the base.

### New Memorandum Proposed

While the wage scale was agreed upon, no general agreement was signed as heretofore because of the insistence of the unions on the insertion of the memorandum of agreement.

The Amalgamated leaders presented a new memorandum wording, enlarging and strengthening their powers with respect to organization of other departments of the industry and making it compulsory for the manufacturers, if they sign such an agreement, to recognize any new unions that may be formed. Signature to an agreement containing such a clause would mean that in a year from now, if not before, any part of the plant organized during the year could present a scale, the manufacturers must recognize the new union, must negotiate the scale, and, in event of failure to arrive at a settlement, all departments would have to cease operations. This, in effect is the construction placed by the manufacturers upon the new memorandum of agreement submitted by the Amalgamated.

On the other hand, the employers desired to have any such clause stricken from the contract. They are willing to treat with the Amalgamated on the wage scale, but are unwilling to sign any agreement which contains an expression of policy on the part of the organization, to which perforce their signatures would give their assent.

### Wedge to Extend Union

Manufacturers presume to see in the new memorandum submitted by the Amalgamated Association's leaders a wedge to organize workers throughout the industry. They now understand more readily the action of the Amalgamated Association in refusing to deal further with the National Committee of the American Federation of Labor to Organize Iron and Steel Workers, a policy enunciated at the Montreal convention of the A. F. of L. It is even felt in some quarters that Samuel Gompers and other leaders of the American Federation of Labor were instrumental in formulating the new policy of the Amalgamated Association.

It is certain that manufacturers will never agree to sign a contract containing such a binding clause. If the Amalgamated leaders insist upon such a provision it is not improbable that there will be a long and costly strike in the sheet and tin plate divisions of the industry, if the rank and file of the workers support the organization. Manufacturers point out that while the Amalgamated Association probably is much stronger numerically and financially than during the ill-fated Homestead strike, it is more expensive for the unions to finance such disorders than it was years ago. Again it is contended that the members of the various lodges are more vitally interested in the question of wages than the question of principle or policy, and it is doubted whether a strike, if it is called, can be sustained by the Amalgamated without seriously undermining its strength.

### Manufacturers United

Manufacturers stand ready to unitedly oppose any attempt, either directly or indirectly on the part of the Amalgamated Association, to unionize the entire industry. They are perfectly willing to treat with the organization in its present confines, as in the past, but they will refuse to subscribe to any contract or

(Continued on page 55)

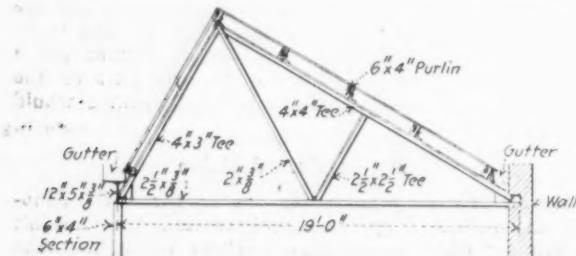
### Arc Welded Building in England

A factory building is being erected at Brixton, England, by the arc welding process, according to the *Engineer*, London, England. The factory which, when completed, will cover an area of 22,000 sq. ft., is arranged with only one floor and has brick walls, and will be covered in with a saw-tooth roof. In all, there will be 93 trusses as shown in the accompanying illustration.

Vertical H-shaped steel stanchions are arranged in lines at about 22 ft. centers and they carry 5 x 12-in. steel joists. Some of the trusses are fixed immediately over the stanchions, while the others are carried by the joists, being fixed to the lower flanges of the latter midway between the stanchions.

Where the walls come, of course, the ends which are not supported by the stanchions or the joists are let into the brickwork.

The method of procedure employed is, first of all, to weld to the ends of each stanchion a cap and a base-plate. The stanchions are then erected in line on concrete foundations, the concrete being taken up for some distance above the base-plate. When the concrete is firmly set the H-joists are hoisted upon the stanchion cap plates, where they are held in position by special clamps, which insure that they are correctly placed, and then welded. The trusses are welded separately at ground level, and when completed are lifted into position and welded there. In the case of those trusses which come midway between the stanchions, angle iron cleats are used to form the junctions between the trusses and the joists. One cleat is welded to each joist before the joists are hoisted into position, so that it is quite simple to make the trusses assume their correct position and to clamp them there while the



The Saw-Tooth Roof Arrangement of a Factory Built by the Arc Welding Process

welding proceeds. Similar cleats are welded to the ends of the trusses while the latter are being constructed, so that when placed in position there is a cleat on each side of each end of the trusses and all the cleats are welded to the trusses and to the joists, thus making a good strong job.

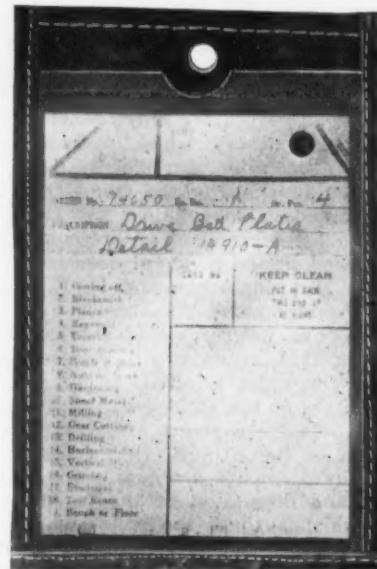
The various parts which go to make up a complete truss are arranged in a horizontal position in simple but effective jigs made on the site and the various joints are arc-welded on the A.W.P.—Alloy Welding Process, limited system, alternating current being used. Fillet welds are employed for the most part, though in some portions butt welds are required. No scarfing or bevelling is resorted to and no pains are taken specially to clean the parts which are to be welded. When all the necessary joints on one face of a truss are welded the truss itself is turned over so that welding may be continued on the joints on its other face. For the latter operation a jig is not required, since the welds on the other face keep the various parts accurately in position. When completed each joist weighs about 3 cwt.

It is stated that one welder and one laborer having the materials cut to length, can assemble and weld complete one truss in an average total time of 1½ hr., and attain an average output of over five complete trusses in one 8-hr. day.

The current comes on the site at 6000 volts and is stepped down to 200 and then again to 70 for the welding circuit, in which a reactance coil is inserted. The electrodes which are employed are of mild steel, flux coated.

### Factory Job-Ticket Carriers

Hints as to how to make factory job-ticket carriers are given by the industrial news service of E. I. duPont de Nemours & Co., Inc., Wilmington, Del. Such a carrier is usually a flexible card holder which travels with each job through the factory and protects the ticket from grease and disfiguring marks. "The ideal flexible card holder is made with a back of leather substitute or rubber coated cloth and a front of transparent sheeting. The back is turned over the edge of the sheeting and

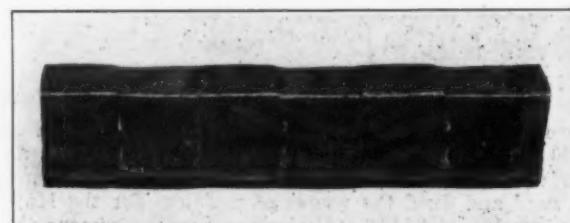


Factory Job-Ticket Carrier Designed to Protect Ticket from Grease

stitched down so as to make a pocket open at the top. A great many shops, particularly those in the automobile industry, use a great deal of leather substitute and transparent sheeting for automobile tops and curtains and they can make these card holders out of scraps. Where the material has to be purchased, it is far better to use a leather substitute which has a pyroxylin coating than a rubber coated cloth. The rubber will not stand up well in contact with oil."

### Concrete Reinforcement Bars

Reinforcement bars, known as Elcannes, of distinctive design are being manufactured by the Lackawanna Steel Co., Lackawanna, N. Y. The deformations, instead of taking the form of projections on the sides of the normal section, consist of broad and deep depressions at regular intervals in the bar surface. The depressions add materially to the bonding surface, which is stated to be 15 per cent greater than that of a plain square bar of the same nominal size. The



Depressions in the Elcannes Concrete Reinforcement Bar Are Broad and Deep, Adding to the Bonding Surface

deformations of the bar are so arranged on opposite sides that a practically uniform cross-section area is maintained. The regular surface and uniform section are emphasized as rendering handling easy and as reducing the difficulty of fabrication or bending in shop or field.

The bars are made from  $\frac{1}{4}$  in. to  $1\frac{1}{4}$  in., and from 0.213 to 5.312 lb. per lineal foot.

# A New By-Product From Coke-Oven Gas

## Proposed Method of Obtaining Alcohol — Details of Foreign Experiments — Possibilities As a Motor Fuel

THE fact that alcohol can be obtained from the ethylene in coke-oven gas has been known for some time. *Revue de Metallurgie*, Feb., 1920, has an interesting article on this subject by E. de Loisy, which is abstracted below. He draws attention to a curious coincidence. Last year, on Dec. 15, Henry Le Chatelier presented a note to the Academy of Sciences in Paris by Monsieur de Loisy on an industrial process for the synthetic manufacture of alcohol from the gas obtained on the distillation of coal. The same day a paper was read on the same subject before the Cleveland Institute of Engineers, England, by E. Bury and O. Ollander. The article in the *Revue* gives an abstract of the English paper and also a copy of the note presented to the Academy of Sciences, so that a comparison can be made.

The English paper has been partially reprinted in the *American Gas Engineering Journal*, March 6, but may not have come to general attention. It is most interesting and describes work carried out at Skinningrove near Newcastle. The normal quantity of ethylene and its homologues present in coke-oven gas from the Durham coals is approximately 2 per cent by volume. An ordinary chemical works efficiency of 70 per cent absorption of this gas as ethyl-hydrogen-sulphate, and a 70 per cent conversion of the latter to alcohol would give a yield of 1.6 gal. of absolute alcohol per ton of coal charged in the coke ovens. A coke oven plant of the size at Skinningrove, using 5800 tons of coal a week, would produce 9200 gal. per week.

### Origin of the Process

During the war experiments were conducted both at Skinningrove and the universities, dealing with direct ethylene recovery from coke-oven gas, the ethylene to be later used in making mustard gas. The feasibility of absorption in charcoal had been established when the armistice put an end to the work, and the question then arose whether this would be a good method to use when the liquid derivatives of ethylene were required and not ethylene gas proper. Sulphuric acid was chosen as a preferable absorbent, but at the outset it became apparent that whether charcoal or sulphuric acid was to be employed, the recovery of ethylene and the manufacture of alcoholic derivatives could not be made to pay unless the fuel expenditure in the recovery process was cut down to a minimum. Furthermore it was known that considerable portions of the sulphuric acid, after absorption of ethylene, are reduced to sulphur dioxide, which, without the recovery of the same, would add very considerably to the cost of manufacture. It was with the object of maintaining the economical possibilities of the recovery in these two particulars that the method given below was worked out.

### Details of the Experiments

The experiments were carried out in leaden scrubbing towers 4 ft. high, and it was found that with sufficient scrubbing surface, 70 to 80 per cent of the total ethylene could be absorbed by 95 per cent sulphuric acid at temperatures between 60 and 80 deg. C. Above this temperature decomposition sets in. These absorption experiments have been repeated and confirmed many times, so that the temperature conditions may be regarded as standard.

The next question was to consider how best to develop the ethyl-hydrogen-sulphate in the most economical manner. Two lines presented themselves. First the oxidation of the ethyl-hydrogen-sulphate by electrolysis or ozonized air for the manufacture of acetic acid. Second the hydrolysis of the ethyl-hydrogen-sulphate for the manufacture of ethyl alcohol, and the recovery of the sulphuric acid for re-use in the system.

By electrolysis it has been determined that an 80 per cent yield of acetic acid may be obtained. Also it has been established that on hydrolysis with superheated steam a 70 per cent yield of ethyl alcohol may be obtained. No investigation has yet been made of the higher alcohols which must be present in the remaining 30 per cent. The main problem was the limit of dilution of the acid with water, bearing in mind that the acid has to be reconcentrated for re-use in the ethylene scrubbers. The 95 per cent sulphuric acid used for the absorption is reduced by the reaction of  $C_2H_4$  plus  $H_2SO_4$  to 77-per cent acid. It has been found that the alcohol can be distilled off, leaving only traces of ethyl-hydrogen-sulphate in the spent acid, by admission of super-heated steam, reducing the spent acid only to 74 per cent. There is reason to believe these figures would be very much improved when working with normal distillation equipment.

In regard to the recovery of sulphur dioxide produced in the process, it is proposed to pass it into the coke-oven gas, where it will precipitate sulphur from the  $H_2S$  present, not only purifying the coke-oven gas and preventing the waste of  $SO_2$ , but providing the elementary sulphur for giving sulphuric acid required for sulphate of ammonia manufacture and alcohol recovery. In most coals volatile sulphur is present in sufficient quantity to give the sulphuric acid required for the manufacture of sulphate of ammonia. The sulphur precipitated from coke-oven gas by this reaction would be in the form of very fine fume. It appears of vital importance to leave the reaction a little short of  $SO_2$  in order to make sure of avoiding excess of the latter, which would produce corrosion of the mains. The proposal then is to slightly limit the amount of sulphur dioxide leaving traces of  $H_2S$  in the gas, and pass the whole of the gas after the reaction through a single oxide purifier.

In order to have the strict fuel economy necessary to make the process a success, it is proposed to use the sensible heat of the wet gas coming from the hydraulic main. The clean cool gas from the benzol house is raised to 70 to 80 deg. C. by an efficient system of heat interchange, and it is proposed to raise the acid to the proper temperature by producer gas made from waste coke breeze briquettes. It is believed from calculation that the fuel value of the coke oven gas will only be lowered from 467.7 to 462.2 B.t.u. per cu. ft., a difference of only 1.1 per cent. A flow sheet is then given to show in detail how the process will be carried out.

### Chief Points Established

It is considered that the following points are new:

The determination of temperatures of 60 to 80 deg. C., at which the absorption of ethylene in coke-oven gas may be effected so as to give an ordinarily good chemical yield without decomposition of the original products.

The cutting down of the absorption area required for the removal of the ethylene from coke oven gas by heating the gas and absorbent acid to 60 to 80 deg. C.

The use of waste heat and fuel for the reactions, which have not up to now been utilized for other purposes.

The utilization of the decomposition product, namely sulphur dioxide, for recovery to the elementary sulphur, and simultaneously the purification of the coke-oven gas. The sulphur so obtained being generally adequate for the manufacture of the sulphuric acid required for the whole of the coke-oven operations, in addition to the acid requirements of the alcohol plant itself.

### Use as a Motor Fuel

During the discussion of this paper it was pointed out that the yield of alcohol mentioned, when mixed with benzol, would yield in quality the most perfect motor fuel yet devised. Also that ethylene is the start-

ing point of many reactions producing such valuable substances as chloroform, iodoform, acetic acid and acetone; all wanted in large quantities, and many of them having high monetary value. These large scale experiments have satisfied Messrs. Bury and Ollander that cheap alcohol can be made from coal gas on an industrial scale. A number of chemical engineering difficulties present themselves in working out the large scale process, but nothing which is in the least degree insurmountable.

Monsieur de Loisy in the French article then gives the full copy of the note presented to the Academy of Sciences the same date the English paper was read. He was inspired by the work done by the great Berthelot on the synthetic production of alcohol, and by the large total amount of ethylene available in the gas produced by coke ovens and gas works. Although only present to the extent of about 2 per cent by volume, yet the total amount reaches very large figures. On a trip to England in December, 1918, he learned of the work being done in absorbing ethylene direct by charcoal.

On his return he considered the question and decided sulphuric acid would be a better absorbent, if the extreme slowness of absorption could be overcome.

He thereupon experimented with the use of various catalytic agents, and was finally successful in finding one cheap enough so that its regeneration was not necessary, and so effective that he claims absorption is comparable to that of carbonic acid by potash solution. The name of this catalytic agent is not given.

In order to make the process practical he would use the spent acid, from which the alcohol has been distilled, in the manufacture of sulphate of ammonia; or better still also use this acid to absorb moisture and traces of benzol, acetylene, etc., from the gas from the benzol plant, before the gas passes to the concentrated acid for ethylene absorption. One per cent of the catalytic agent is necessary, and with laboratory apparatus of the simplest description small quantities of pure ethyl alcohol have been made by this method, for several months, from the ordinary city gas of Paris.

G. B. W.

## Steam versus Electric Driven Mills

### Advantages, Disadvantages and Relative Economies

#### Discussed—Tonnage Outputs and Operating Costs

A DISCUSSION of steam versus electric driven mills presented at a meeting of the Association of Iron and Steel Electrical Engineers, 513 Empire Building, Pittsburgh, in December, is available in printed form. H. E. Siebert, assistant combustion engineer Bethlehem Steel Co., Bethlehem, Pa., gave results of tests, together with numerous curves and tables, made on some of the largest steam driven mills in the Pittsburgh and Youngstown districts. For the sake of comparison, results of tests from the work of Dr. Puppe on steam and electric driven mills in Europe were included. The economic side of the problem was also discussed.

From the data presented the following conclusions were drawn:

1. The power requirements by different mills rolling at widely different rates show very close agreement. This is especially true of the blooming and billet mills, both reversing and 3-high.

2. The data shows that the electric reversing mill requires just as much power per unit of elongation as the steam driven reversing or the 3-high mill.

3. The 60 per cent kinetic energy which is stored in the rotating masses of the electric reversing mill and which is reclaimed in the form of electrical energy, does not appear on the curves in favor of this form of drive. This fact is evidently due to the greater moment of inertia of the rotor masses, as compared with that of the steam driven mills.

4. Acceleration losses in reversing steam drives vary from 12 to 36 per cent of the indicated work, for the light and heavy engines respectively. The lighter the engine the easier it is to control, and the less this loss.

5. The reversing mill engine especially in the form of a twin tandem compound, is a very complicated machine, and as such it demands more attention and repair than the average mill mechanical force can possibly devote to it, in the time that is available for such repairs.

The single lever controlled engine is a forward step in the direction of steam economy, but it imposes a heavy penalty in the form of acceleration loss. Can we not build a light, yet a simple and strong engine?

6. The motor driven mill possesses decided advantages in the way of mechanical simplicity, space required, cleanliness of plant, etc., aside from its economic advantage.

7. No fixed rule can be laid down for the relative economy of the steam and electric drives, for different plants, because the plant conditions vary within wide limits. For the case taken the advantage is in favor of the electric drive. It does not follow, however, that this advantage would obtain in another case. Each particular plant must be studied in detail. Such a study may show that the economic gain in one plant does not apply to another plant where the conditions may be different.

#### Discussion

In a discussion of the paper, data on steam consumption obtained on a 55 x 60-in. twin simple reversing

engine driving a 40-in. blooming mill was furnished by D. E. Eppelsheimer, steam engineer American Rolling Mill Co., Middletown, Ohio. Not crediting the low pressure exhaust steam used by the turbines, the net steam consumption for the engine per ton of steel rolled was calculated to be 1120 lb. This method of determining the steam consumption of the engine, Mr. Eppelsheimer said, eliminates all errors due to cylinder condensation, leakage, etc., which are always present with indicator tests.

#### Tonnage Output Important Factor

"Too much is being said about power consumption and power costs and too little about tonnage," said K. A. Pauly, general engineer General Electric Co., Schenectady, N. Y. "As for the non-reversing mills, it has been thoroughly established that, due to greater flexibility and reliability, the electric drive has defeated the steam drive in every detail, tonnage, ability to carry overloads, in emergencies, maintenance and power consumption, and the engine is seldom seriously considered for a non-reversing mill. The issue, therefore, resolves itself into the question of steam vs. the electric reversing mill, and here the real issue is tonnage."

"The two questions to be answered are: First, can the electrically driven reversing mill compete with the steam mill in tonnage; and, second, have tonnage records comparable with steam mills been produced in electrically driven mills."

"The first question can certainly be answered in the affirmative. However, we must bear in mind that the electric mill has one handicap and that is the greater inertia of its revolving parts. If we are to compete in tonnage, we must get our motors up to speed quickly. To do this, we must put power into them. If the electric drive is properly designed with sufficient overload capacity in current to take the peaks necessary for the quick reversals and accelerations with the steel in the rolls and to permit reductions per pass which are taken with the steam engine, the tonnage outputs of the electric mill will exceed those of the steam mill. On the other hand, if means are provided in the design of the machines to limit the current taken by the roll motors, we cannot hope to compete with an engine driven mill which can take steam full stroke without being handicapped by a valve to automatically reduce the steam pressure and, therefore, the power of the engine below its maximum rated capacity when the load comes on."

"After carefully weighing the various factors involved we have decided not to resort to any of these throttling windings. On the contrary, we have adopted the shunt type of motor and generator as our standard

for driving reversing mills, appreciating that they will go after any load that is put up to them. We are designing the machines accordingly with high overload capacities, recommending that the circuit breakers be set at such values as will permit the motors to deliver their maximum guaranteed overloads.

"As to the second question, while but few of the electric reversing mills installed may compare favorably in tonnage outputs with large steam mills, certainly some do.

"The Trumbull 36-in. reversing blooming mill has rolled a 20 x 21-in. ingot weighing 6700 lb. to a 6½ x 6¾-in. billet in 13 passes in 57½ sec. and 56 of these ingots—187 short tons—in 1 hr. At no time was the steel delayed by the motor and it is expected soon to exceed 60 ingots per hr. in this mill.

"The Bethlehem Steel 40-in. reversing blooming mill at Sparrow's Point has rolled one 21 x 43-in. ingot weighing 16,500 lb. to a slab 9 x 38-in. in 1 min., 20 sec., and to a bloom 8 x 8-in. in 2 min., 15 sec., and has rolled 330 tons of 10 x 40-in. slabs in 1 hr. and 198 tons of 8 x 8-in. blooms in 1 hr. Both of these records exceed those of any other electrically driven reversing mill."

Data on a 34-in. reversing mill which had been in operation for six and a half years was given by E. S. Jeffries, electrical engineer Steel Co. of Canada, Ltd., Hamilton, Ont. The mill in this time rolled 1,353,879 net tons of various sizes, varying from 10-in. rounds down to 4 x 4's, the average size being about 5 x 5-in. Electrical operating costs for the six and a half years averaged \$0.1680 per ton, and the total electrical costs including interest on investment, depreciation (20 years), overhead, etc., average \$0.3417 per ton. The equipment,

he said, had given practically no trouble and an outstanding feature was the low labor cost, as this equipment was attended by one operator per shift. Low cost of power, low cost of repairs and maintenance, and few delays were emphasized as features. The speaker also gave electric cost data for a six and a half year period for an 18-in. four stand billet mill, which was driven by a 1600-hp. motor through a herring-bone reduction gear and rolling 4 x 4's to 1¾-in. square. The total electric cost, he said, was \$0.2208 per ton for a total tonnage of 697,012 net tons. Mr. Jeffries also gave cost data on a rod and wire mill which was a Morgan continuous mill, having 10-12-in. roughing stands and 6-10-in. finishing stands, rolling 1¾-in. billets to No. 5 rods. During the same six and a half years, he said, this mill rolled 395,925 tons at a total cost of \$1.0432 per ton.

Results obtained in the operation of three electrically driven reversing mills at the Mark plant of the Steel & Tube Co. of America were presented in a letter by Gordon Fox, electrical engineer Steel & Tube Co. of America, Indiana Harbor, Ind. Comparatively little delay, he said, is being experienced due to the electric drives, the reversing motor can be controlled accurately and easily, and operation is flexible in that the mill may be started or stopped on short notice. The drives are satisfactory, he said, in the matter of power consumption, and maintenance of the electric drive equipment is not an item of heavy expense. In summary, Mr. Fox said, it may be stated as our experience that electrically driven reversing mills are effective and efficient producers and that they may be operated and maintained with comparative ease and economy.

## Orinoco River Improvements and Venezuelan Iron Ore

President Gomez of Venezuela has announced as one of his major plans for internal development the improving of navigation on the Orinoco River. This magnificent internal waterway, comparable in volume to the Mississippi and penetrating several hundred miles into the Venezuelan "hinterland," has been practically unavailable except for local transportation by reason of persistent and shifting sand bars at its mouth. These prevent the entrance of ocean steamers which otherwise can proceed several hundred miles into the interior beyond the well known iron deposits of Imataca. These deposits have been under control of several American concessionaires since the early nineties. At one time the railroad contracting firm of Grant from Minnesota held the concession and planned extensive operations which were never realized, however, chiefly because of financial conditions in the United States. Later Schwab interests made an endeavor to secure the concession but failed by reason of disagreements with the Venezuelan authorities. Later, about 1910, the property came into control of a Canadian syndicate and more than \$2,000,000 was spent in developments and improvements. Shipments were begun to Philadelphia and two cargoes of ore, hematite running 64 per cent and better, were delivered. A line of freight boats was provided for the business. However, difficulties with the organization at the mines, due partly to climatic conditions and somewhat to a lack of understanding of the problems of operation in a foreign tropical region, prevented the successful continuance of the development. The great difficulty, however, was due to the obstructions to river navigation which had not been fully realized and which were of such a nature that the required improvements could not be advantageously undertaken by a single industrial enterprise. It was necessary to load the ore on shallow barges and transfer a long distance to the ocean boats on which it was reloaded in open sea practically. The Canadian endeavor was a complete failure financially and for nearly 10 years no attempt has been made to realize these large, rich, and geographically near iron deposits. In the meantime the Schwab interests took up the very distant Chilean iron deposits and have expended upward of \$15,000,000 on their equipment and development. Shipments were

begun in 1914, but have been since suspended owing to war conditions. Large American interests have secured extensive iron deposits in Brazil and probably will soon undertake their operation to supply the European and the Atlantic coast demand in the United States. Continued large shipments of iron ore from Cuba indicate the demand and need of a foreign supply available by ocean freight to the Atlantic plants.

It is likely that the proposed Government improvements to navigation on the Orinoco will soon again bring to realization the Imataca iron deposits of the Orinoco.

## Coal Operators Warned

WASHINGTON, June 29.—Bituminous coal operators have been warned again by the Department of Justice that prices ranging from \$7 to \$11 per ton at the mines are exorbitant and constitute profiteering under the Lever Act. The Department, in a statement explaining its recent order to district attorneys for the prosecution of coal profiteers, said that present high prices cannot be justified either by decreased production, car shortage, or export demands.

With reference to the alleged shortage of production, the Department appears to take the view that there is no occasion for alarm in the present situation, and quotes figures of the Geological Survey to the effect that the production of coal for the first four months of the present year exceeded the production for the corresponding period of any recent year excepting 1917 and 1918. With respect to car shortage the Department holds that the recent orders of the Interstate Commerce Commission, giving priority to the movement of coal, should relieve the situation to a considerable extent.

The National Coal Association takes exception to the Department's statements relative to the supply of coal. It says that this is a real shortage, but it is not a hopeless situation, and that there is no occasion for public alarm.

Navigation of the Connecticut River from Holyoke, Mass., to Long Island Sound practically is assured by the signing of the water-power bill by President Wilson, according to Charles H. Tenny, president Connecticut River Co., which will build a large dam at Windsor Locks, Conn.

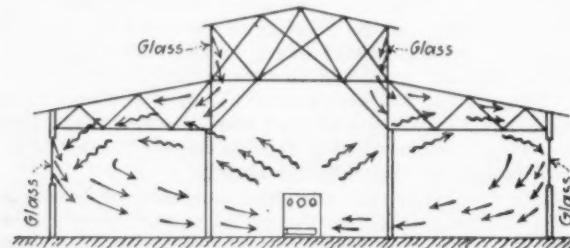
## Mechanical Hot Blast Heater for Foundry or Shop

For the purpose of reducing the amount of fuel used in heating the upper section of a building and to draw the heated air to the floor where it is needed, Robert Gordon, Inc., 622 West Monroe Street, Chicago, has embodied the principle of air-propulsion in a hot air furnace. In the Gordon heater a mechanically driven multi-vane fan projects the heated air horizontally from the top of the furnace at a rate of from 5000 to 15,000 cu. ft. per min., depending on the rated capacity of the installation. Because of its speed, the air rises only sufficiently to form a slight arc terminating at the sides of the building. Here its direction is determined by the suction of the furnace fan, which draws in the air on the floor level.

Although the natural tendency of warm air is to rise, in this case the cold air pressing down from above and the vacuum created below forces it in a downward sweep back to the base of the heater. This scheme of circulation has the effect of holding approximately 75 per cent of the heat units generated by the furnace within the breathing zone. In foundries a further advantage of the installation is the fact that the down current of comparatively dry warm air absorbs the steam rising from the molds on the floor.

At the furnace the cycle of circulation, just described, is completed, the air on the floor being sucked in through an annular opening practically surrounding the base of the furnace and an aperture below the coal door, after which it is again forced out by the fan through the open leader pipes of the bonnet into the atmosphere of the shop.

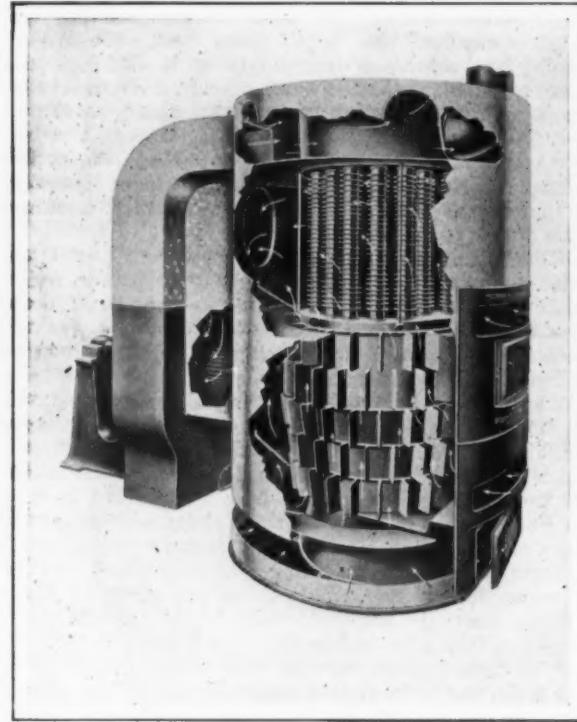
In a large machine shop, equipped with a Gordon



Cross-Section of a Shop of Monitor Type Construction, Showing Scheme of Air Circulation Set Up by Gordon Hot Blast Heater. Because of the speed of the hot air as it is blown from the furnace, it rises only enough to form a slight arc terminating at the walls of the building. There the pressure of the cold air from above and the vacuum created by the suction of the fan at the base of the heater causes it to take a downward sweep to the floor.

furnace, careful thermometer readings taken near windows, in remote corners, at the floor level and at an elevation of 15 ft., it is stated, showed a range in temperature of only five degrees; and in another plant, tests showed a temperature of 68 deg. Fahr. at the floor, 74 deg. at an elevation of 9 ft., 41 deg. at a point 18 ft. above the floor, and 28 deg. just below the roof of the monitor at a height of 36 ft.

The grates in the Gordon heater are of the revolving shell bar type with three wearing or burning sur-

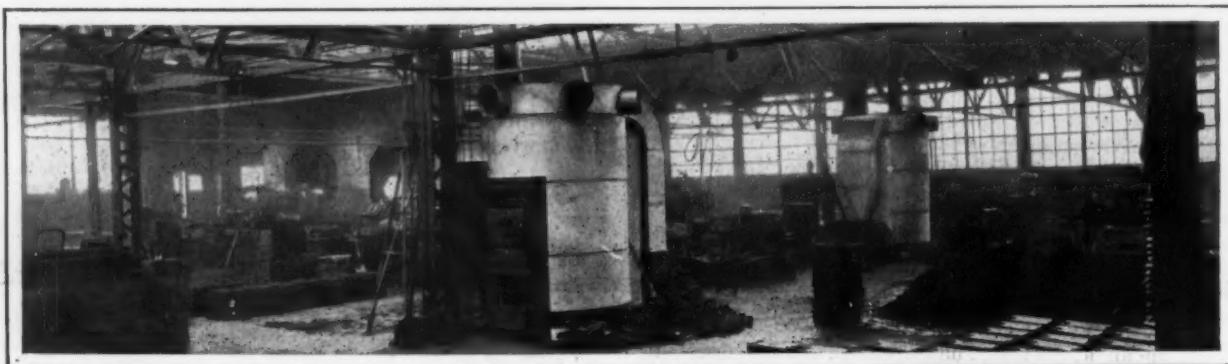


Cut-away View of Gordon Furnace. The inflowing air, entering at the bottom and side, passes through a series of staggered fins and tubes, where its temperature is raised from 80 deg. Fahr. to 400 deg., as desired. The heated air is drawn from the furnace by a multi-vane blower which forces it into the building through various outlets in the distribution chamber of the heater.

faces, features which are conducive to long service. They operate in pairs in either direction and when revolved in the proper direction, will crush and dump cinders and clinkers. Grates of this type have a large free air surface, thus promoting the flow of the air through the coal and eliminating dead pockets in the fire. Through the mechanical projection of the warmed air from the furnace, the effectiveness of the heater is freed from the influence of outside atmospheric conditions, such as the direction or force of the wind. The furnace is usually installed in the middle of a plant structure, as the best results are obtained when conductor piping is unnecessary. However, in a few installations local conditions required placing the furnace outside the plant room to be heated and in those cases conductor piping was used with satisfactory results.

The heater is built with an interior and front entirely of heavy cast iron, inclosed by a galvanized sheet metal casing. The diameter of the casing ranges from 54 to 60 in. and its height from 8 ft. 4 in. to 9 ft., according to the size of the furnace installed. From 3 to 5 hp. is required to operate the fan.

The heater is arranged to burn bituminous or anthracite coal, coke, oil and gas. The manufacturer has developed an oil burner that has a range of combustion from 1 gal. to 12 gal. per hr. This is a power driven unit with a pressure blower and geared pump.



Two Gordon Heaters Installed in Foundry of Peerless Foundry Co., Cincinnati. The building is 120 x 200 ft., with an average roof height of 18 ft., and has a total exposed wall area of 7300 sq. ft. and a total glass area of 9700 sq. ft. Each heater handles about 8000 cu. ft. of air per min. The distance from heater to the most remote corner is 135 ft.

# American Society for Testing Materials

## Rail Steel, Molybdenum for Structural Steel, Retained Sulphur Limit and Test for Galvanized Coatings Notable Topics of Annual Meeting

OTHER lines than iron and steel came in for major attention at this year's meeting of the American Society for Testing Materials. It would seem that the trail of procedure has been first blazed well in the consideration of ferrous materials of engineering and now it is questions of other materials that are conspicuous. Though specification making and revision and the coincident study of iron and steel goes on apace, recommendations by committees to annual meetings are made only after substantially all differences are ironed out. Little occasion thus remains for debates. The notably active committees this year were those devoted to concrete, gypsum and the like.

A feature of the 1920 meeting was the large number of committee conferences. No less than 56 such gatherings were scheduled involving some 1500 members, though of course, all were not present. Good attendance at these and the general sessions was noteworthy, a result, it was admitted, of the fewer diverting influences of the place of meeting, Asbury Park, N. J. The marked departure in switching the annual convention from Atlantic City, which had come to be regarded almost as a fixed meeting spot, was referred to in the account last week of the early sessions. The registration of attendance showed that almost as many were present as last year, but there was a marked falling off in the number of ladies as compared with last year.

General satisfaction was expressed in respect to the accommodations and facilities for the meeting and the officers were assured that their action in selecting the place and the hotel was approved.

Among the contributions to the meeting which were received with special interest were the following: A new method for testing galvanized coatings offered by Dr. Allerton S. Cushman, president Institute of Industrial Research, Washington; a description of the processes of manufacture, heat treatment and physical properties of large power-forged chain as made at the Boston Navy Yard, presented by Carlton G. Lutts, physical metallurgist of the hull division at the Boston yard; suggestions for more intensive investigations in delimiting the scope and kind of application for the various materials of engineering, contained in President

J. A. Capp's address; a strong brief for molybdenum as an alloying element in structural steel presented by G. W. Sargent, and a discussion on shattered zones so-called in steel rails by Dr. J. E. Howard, engineer-physicist Interstate Commerce Commission, Washington. Of outstanding importance in the steel committee's report was a decision to keep in force for at least another year the existing war-time clauses in 14 specifications in respect to the limits of the sulphur and phosphorus content of steels.

A happy personal incident was a formal recognition of the long active service in an official capacity of Past-President A. A. Stevenson. Mr. Stevenson presided at the session in which President Capp made his address and took the opportunity to mention that it was his last appearance as a member of the executive committee, retiring as an ex-officio former-president member to make way for Mr. Capp. He was practically interrupted by Mr. Capp so Secretary Warwick could read a tribute to Mr. Stevenson, which had been drawn up in the form of a resolution. The resolution, which was passed with applause, told how he had served continuously for nine years as a member of the executive committee, entering it on Oct. 14, 1911, to fill the brief unexpired term of the late James Christie, how after being a regularly elected member he was vice-president in 1915 and 1916, and then in 1917 was elected president, the first representative of the producing interests to be so honored. Mr. Warwick said that of 40 meetings of the committee, he had attended 35 and counting the forty-first of the morrow, his record would be 36, or nearly 88 per cent.

The executive committee, through President Capp, reported action taken with regard to the new Federated American Engineering Societies, the organization which took form in Washington on June 4 to provide the machinery for engineers' speaking collectively on matters of public interest involving engineering. The committee determined to remain with a sympathetic interest in the movement, reappointed the members who represented the society in the Washington meeting and authorized the issue of an explanatory circular in the near future together with a questionnaire calculated to ascertain the sentiment of the membership.

## The Recommendations of the Committee on Steel

THE proposed tentative specifications for commercial bar steels presented by committee A-1, cover ordinary commercial carbon bar steels, rounds, squares and hexagons of all sizes, and flats not over 6 in. wide and hot rolled or cold-finished, as specified. They are classified as shown in the table on the next page.

### Phosphorus and Sulphur Note in Specifications

At the last annual meeting committee A-1 recommended that the note which had been added to 43 specifications by action of the Society in 1918, raising the rejection limits for sulphur in all steels and for phosphorus in acid steels 0.01 per cent above the values given in the specifications, was removed from 29 of those specifications, effective July 1, 1919; and that with respect to the remaining 14 specifications, consideration of the removal of the note was deferred until the annual meeting in 1920. The specifications on which the note now appears include those for rails, structural steel, billet-steel concrete reinforcement bars, steel castings, boiler tubes and chain. On Monday, June 21, on an agreement that open conditions still obtain, the committee recommended that the removal of the

note be again deferred until the meeting of 1921. The recommendation was approved.

### Requirements for Track Bolts

The workmanship requirements of specifications for low-carbon-steel track bolts, quenched carbon-steel track bolts and quenched alloy-steel track bolts were revised. New provisions are that the nuts shall have a hand free fit on the bolt from two to six turns, and wrench tight the balance of the screw length without distorting the threads or twisting the shank. They shall be screwed on the bolts before packing, a sufficient number of turns to hold them in place until used. The outside diameter of the finished rolled thread shall not exceed the diameter of the shank of a cut thread bolt of corresponding size.

The committee has been co-operating with the track committee of the American Railway Engineering Association. It thus proposes a minor revision in the specifications for steel screw spikes. It was not able to reach an agreement on tie plates, but plans to study these specifications during the coming year. The only revision proposed increases the permissible variation

in rolled widths of plates with shoulders perpendicular to the direction of rolling from  $\frac{1}{8}$  to  $3/16$  in. This increase in tolerance has been found to be necessary owing to the fact that it is impossible to maintain the width within closer limits on the large number of plates of intricate design that are now being manufactured.

The committee has marked time in the consideration of revisions in specifications for carbon-steel rails "in view of the fact that the rail committee of the American Railway Engineering Association is about to adopt a revised rail specification, and the committee wishes to make every effort to meet the recommendations of that association. The formal co-operative relations which it was hoped to establish with the A. R.

| Grades and Chemical Compositions of Bar Steels |                    |                        |                              |                      |
|--|--------------------|------------------------|------------------------------|----------------------|
| GRADES   | Carbon<br>per cent | Manganese,<br>per cent | Phos-<br>phorus,<br>per cent | Sulphur,<br>per cent |
| <i>Open-hearth Grades</i>                      |                    |                        |                              |                      |
| Open-hearth<br>dead soft . .                   | 0.05-0.12          | 0.55 max.              | 0.05 max.                    | 0.06 max.            |
| Open-hearth<br>soft . . . . .                  | 0.08-0.18          | 0.55 "                 | 0.05 "                       | 0.06 "               |
| Open-hearth<br>15-25 carbon.                   | 0.15-0.25          | 0.60 "                 | 0.05 "                       | 0.06 "               |
| Open-hearth<br>20-30 carbon                    | 0.20-0.30          | 0.70 "                 | 0.05 "                       | 0.06 "               |
| Open-hearth<br>25-40 carbon                    | 0.25-0.40          | 0.70 "                 | 0.05 "                       | 0.06 "               |
| Open-hearth<br>35-50 carbon                    | 0.35-0.50          | 0.70 "                 | 0.05 "                       | 0.06 "               |
| <i>Bessemer Grades</i>                         |                    |                        |                              |                      |
| Bessemer<br>welding . . . . .                  | 0.12 and under     | 0.60 max.              | 0.115 max.                   | 0.08 max.            |
| Bessemer<br>soft . . . . .                     | 0.15 and under     | 0.70 "                 | 0.115 "                      | .....                |
| Bessemer<br>15-25 carbon                       | 0.15-0.25          | 0.90 "                 | 0.115 "                      | .....                |
| Bessemer<br>25-40 carbon                       | 0.25-0.40          | 0.90 "                 | 0.115 "                      | .....                |
| Bessemer<br>35-50 carbon                       | 0.35-0.50          | 0.90 "                 | 0.115 "                      | .....                |
| Bessemer<br>40-60 carbon                       | 0.40-0.60          | 1.00 "                 | 0.115 "                      | .....                |
| <i>Screw Steel Grades</i>                      |                    |                        |                              |                      |
| Bessemer<br>Screw . . . . .                    | 0.08-0.16          | 0.60-0.80              | 0.09-0.13                    | 0.075-0.15           |
| Open-hearth<br>screw . . . . .                 | 0.15-0.25          | 0.60-0.90              | 0.06 max.                    | 0.075-0.15           |

E. A. rail committee were not found possible and committee A-1 accordingly will take up during the coming year the revision of the A. S. T. M. specifications."

#### Specifications for Plates

The committee reported that A. W. Gibbs, chairman of the tank car committee of the American Railroad Association, submitted the results of many tests which indicated that possibly the minimum tensile strength limits in the specifications for plates for forge welding of 48,000 lb. per sq. in. for plates  $\frac{3}{4}$  in. or under in thickness, and 45,000 lb. per sq. in. for plates over  $\frac{3}{4}$  in. in thickness were lower than necessary. Mr. Gibbs further emphasized that while tensile strength is less important than chemical requirements (because deficiency in tensile strength can be compensated for by increasing the thickness of plate), the designs of tanks must be based on the lowest tensile strength limit allowed in the specifications; so that the practical effect is to carry around in most cases considerable unnecessary weight, for the experience has been that the tensile strength of the weakest

sheets will in most cases be materially above the lower limit of the specifications.

Revisions now appear by which the minimum tensile strength for all plates is increased to 50,000 lb. per sq. in. and the carbon content for plates over  $\frac{3}{4}$  in. in thickness raised to not over 0.20 per cent. The minimum manganese limit has also been raised to 0.40 per cent.

Another revision is that plates  $3/16$  in. or under in thickness for cars or locomotives shall not be subject to tension test.

A proposal that permissible variations in weight and thickness now specified for plates 132 in. or over in width apply to plates 132 to 144 in., inclusive, in width, and that until such time as percentages of over-weights of plates wider than 144 in. can be established, permissible variations for such plates shall be agreed upon by the manufacturer and purchaser was withdrawn.

A revision in a number of specifications was made providing that tension and bend test specimens for rivet bars which have been cold-drawn shall be normalized before testing.

#### Steel Castings for Railroads

In January, 1920, a joint committee on steel castings for railroads was formed, consisting of representatives of the American Society for Testing Materials, the mechanical section of the American Railroad Association, and the U. S. Railroad Administration. The chairman of the joint committee is F. M. Waring, engineer of tests, Pennsylvania Railroad, Altoona, Pa., and J. C. Davis of the American Steel Foundries has been elected chairman of the society's representatives.

#### Steel Tubing and Pipe

Specifications for lap-welded and seamless steel boiler tubes for locomotives are now made to agree with those for stationary service for which it is required that "finished tubes  $3\frac{1}{2}$  in. or under in outside diameter shall be circular within 0.02 in. and the mean outside diameter shall not vary more than 0.015 in. from the size ordered. For tubes over  $3\frac{1}{2}$  in. in outside diameter, these variations shall not exceed 0.5 per cent of the outside diameter."

Committee A-1 and committee A-2 on wrought iron agreed upon an extension of the tables for hydrostatic pressures and standard weights of welded pipe to include pipe up to and including 12 in. in diameter.

#### Automobile and Tool Steels

The committee revised the specifications for automobile carbon and alloy steels a year ago in co-operation with the Society of Automotive Engineers. The change has to do with chromium steels.

The committee changed the tentative speculations for carbon tool steel by omitting the ten grades of carbon tool steel, with carbon varying 0.15 per cent between certain fixed limits, and the substitution therefor of a provision that the percentage of carbon may vary by ranges of 0.10 per cent, with rejection limits plus or minus 0.025 per cent. By this provision tool steel may be ordered, for example, with a carbon range of 0.60 to 0.70 per cent, with rejection limits of 0.575 and 0.725 per cent, which would not be possible under the present specifications. The committee asked that the specifications be continued as tentative.

### Recommendations of Other Committees

THE report of committee B-2 on non-ferrous metals and alloys included one from W. R. Webster, Bridgeport Brass Co., chairman of a sub-committee on wrought metals, presenting tentative specifications for sheet high brass.

#### Sheet High Brass

The specifications cover commercial sheet brass commonly used for drawing, forming, stamping and bending. "Since high brass is used for many purposes

where the requirements of the operations used are too particular to be specified by any of the ordinary physical tests, it is frequently advisable to submit samples or drawings to the manufacturer and secure an adjustment of annealed or temper to suit the actual operations to which the material is to be submitted."

The chemical composition is: Copper, 64.5 to 67.5 per cent; lead, not over 0.30 per cent; iron, not over 0.05 per cent; zinc, remainder; other impurities, not over 0.10 per cent. Physical properties and tests are:

**Hard Brass.**—The average Brinell hardness of 10 samples of cold-rolled brass 0.080 in. or over in thickness shall be within the limits in the table and the average of tension tests of two samples of cold-rolled brass thinner than 0.080 in. shall conform to the minimum requirements there shown.

|                   | Hardness No. | Tensile Strength, lb. per sq. in. | Elongation in 2 in., per cent |
|-------------------|--------------|-----------------------------------|-------------------------------|
| Quarter hard..... | 75-95        | 45,000                            | 27.5                          |
| Half hard.....    | 95-115       | 52,500                            | 15.0                          |
| Hard.....         | 130-150      | 67,500                            | 5.0                           |
| Extra hard.....   | 150-170      | 80,000                            | 2.0                           |
| Spring.....       | 160-180      | 87,500                            | 1.0                           |

**Soft Brass.**—The average Brinell hardness of ten samples of annealed brass 0.080 in. or over in thickness shall be as given in the table, and the average of tension tests of two samples of annealed brass thinner than 0.080 in. shall conform to the minimum requirements there shown:

|                          | Hardness No. | Tensile Strength, lb. per sq. in. | Elongation in 2 in., per cent |
|--------------------------|--------------|-----------------------------------|-------------------------------|
| Light anneal.....        | 65-75        | 45,000                            | 32.0                          |
| Drawing anneal.....      | 55-65        | 42,000                            | 33.0                          |
| Soft drawing anneal..... | 47-55        | 40,000                            | 42.0                          |

### Aluminum for Making Iron and Steel

The sub-committee on aluminum and aluminum alloys, Jesse L. Jones, Westinghouse Electric & Mfg. Co., Pittsburgh, chairman, presented tentative specifications for aluminum for use in the manufacture of iron and steel. They cover two grades of virgin and four grades of secondary aluminum. They are the work, in part, of a special sub-committee composed of members of committee A-1 on steel, Messrs. Speller, Sargent, Buck, Uhler and Aupperle; and members of committee B-2, Messrs. Blough, T. J. Johnson, Pannell, Brile and Jones.

Prof. William Campbell, Columbia University, chairman of committee B-2, reported also a complete revision of the tentative specifications for aluminum ingots for remelting and for rolling. Three grades are now proposed containing a minimum of 99.5, 99.0 and 98 per cent aluminum. The new grade 99.5 per cent was added to meet the demands of the bureau of aircraft production and the manufacturers of electrical apparatus.

A nomenclature of non-ferrous alloys, including a tentative color classification was proposed as follows:

### Nomenclature of Non-Ferrous Alloys

#### BRASS

1. The term *Yellow Brass* shall be used for Zinc-Copper alloys only, containing from 63 to 80 per cent copper and having a yellow or brass color.

EXAMPLE: *Composition of Alloy:* Zinc, 30 per cent; Copper, 70 per cent.  
*Systematic Name:* Zinc-Copper.

2. The term *Red Brass* shall be used for Zinc-Copper Alloys only, containing more than 80 per cent copper, in which the color varies from a golden to a copper red.

EXAMPLE: *Composition of Alloy:* Zinc, 15 per cent; Copper, 85 per cent.  
*Systematic Name:* Zinc-Copper.

3. The term *Yellow Red Brass* shall be used for Zinc-Copper alloys only, containing from 55 to 63 per cent copper, in which range the Brass has a yellowish red color.

EXAMPLE: *Composition of Alloy:* Zinc, 40 per cent; Copper, 60 per cent.  
*Systematic Name:* Zinc-Copper.

4. **Lead Brass.**—Brass containing more than 0.50 per cent of lead shall be known as Lead Yellow, Red or Yellow-Red Brass, according to the percentage of Copper it contains.

EXAMPLE: *Lead-Yellow Brass.*  
*Composition of Alloy:* Lead, 1 per cent; Zinc, 33 per cent; Copper, 66 per cent.  
*Systematic Name:* Lead-Zinc-Copper.

5. **Tin Brass.**—Brass containing more than 0.25 per cent Tin shall be known as Tin Yellow, Red or Yellow-Red Brass, according to the percentage of Copper it contains.

EXAMPLE: *Tin-Yellow Brass.*  
*Composition of Alloy:* Tin 0.50 per cent; Zinc, 39.50 per cent; Copper, 60 per cent.  
*Systematic Name:* Tin-Zinc-Copper.

6. In cases where other metals are added, these shall be designated by the use of the proper prefix or prefixes:

EXAMPLE: *Manganese-Tin-Brass.*  
*Composition of Alloy:* Manganese, 0.50 per cent; Tin, 1 per cent; Zinc, 38.50 per cent; Copper, 60 per cent.  
*Systematic Name:* Manganese-Tin-Zinc-Copper.

#### BRONZE

7. The term *Bronze* shall be used for Tin-Copper Alloys only, containing over 50 per cent Copper. In cases where other metals are added these shall be designated by the proper prefix or prefixes:

EXAMPLE: *Aluminum-Bronze.*  
*Composition of Alloy:* Aluminum, 3 per cent; Tin, 5 per cent; Copper, 92 per cent.  
*Systematic Name:* Aluminum-Tin-Copper.

#### CUPRO-NICKEL

8. The term *Cupro-Nickel* shall be used for Nickel-Copper Alloys in which Copper predominates. In cases where other metals are added these shall be designated by the proper prefix or prefixes:

EXAMPLE: *Iron-Manganese-Cupro-Nickel.*  
*Composition of Alloy:* Iron, 1.5 per cent; Manganese, 2 per cent; Copper, 67 per cent; Nickel, 29.5 per cent.  
*Systematic Name:* Iron-Manganese-Nickel-Copper.

#### NICKELENE

9. The term *Nickelene* shall be used for Nickel-Zinc-Copper Alloys only. In cases where other metals are added these shall be designated by the proper prefix or prefixes:

EXAMPLE: *Lead-Nickelene.*  
*Composition of Alloy:* Lead, 1 per cent; Nickel, 5 per cent; Zinc, 31.50 per cent; Copper, 62.50 per cent.  
*Systematic Name:* Lead-Nickel-Zinc-Copper.

The committee E-4 on magnification scales for micrographs will hereafter be known as the committee on metallography. It is forming a sub-committee on "Preparation of Metallographic Specimens" with Prof. William Campbell as chairman, and will cooperate with other committees of the society interested in metallographic problems. The committee recommended the forming of a standing committee on pyrometry.

#### Definitions of Wrought Iron Terms

Committee A-2 on wrought iron, in co-operation with committee A-1 on steel, as stated, extended tables of weights, dimensions and test pressures for standard and extra strong pipe in the standard specifications for welded wrought-iron pipe to include sizes from 6 to 12 in.

Tentative definitions were presented of some of the terms used in connection with wrought-iron specifications as follows:

**Puddling.**—The process of making wrought iron by oxidizing and removing most of the silicon, carbon, manganese and phosphorus contained in pig iron in a reverberatory furnace. "Puddling" formerly was applied only to the practice of employing refined pig iron and "Pig Boiling" was the name applied when unrefined pig iron was used, but now this distinction is not generally made as the pig iron is seldom refined. Puddling as practiced to-day is really pig boiling.

**Bushelling.**—The process of heating to a welding heat in a reverberatory furnace, miscellaneous iron, steel or a mixture of iron and steel scrap cut into small pieces.

**Fagoting.**—The making of a "Fagot" or "Box" consisting of sides and bottom made of muck or scrap bar, the interior of which is filled with miscellaneous small iron scrap or a mixture of small iron and steel scrap.

**Muck Bar or Puddled Bar.**—Bar rolled from puddled balls, made wholly from puddle pig iron.

**Common Iron.**—Iron made from rerolled scrap, no attempt being made to separate the iron and steel scrap.

**Merchant Bar Iron.**—Iron rolled from miscellane-

ous scrap, or from a box pile or fagot made of scrap bars and miscellaneous scrap or bushelled bars and miscellaneous scrap.

**Refined Bar Iron or Refined Wrought-Iron bars.**—Iron rolled from muck bar pile, the muck bar being rolled from all puddled pig iron, or rolled from a box pile of muck bars and wrought scrap free from steel; the bar to be the full length of the pile.

**Double Refined Iron.**—Iron made by cutting refined iron bars, piling them in either a slab pile or box pile, heating them and rerolling into finished bars.

In *specifications for staybolt iron* it was recommended that section 10 be revised to read as follows by the addition of the italicized figures and the omission of the figures in brackets: "The bars shall be truly round within 0.01 in. and shall not vary more than [0.005] 0.01 in. above nor more than [0.01] 0.005 in. below the specified size."

#### Corrosion of Iron and Steel

Committee A-5 reported the first failures of bare sheets exposed at Fort Sheridan, Ill., and the group of sheets which failed at this point are the same as those that failed first at Pittsburgh. No failures have as yet been reported from the Annapolis test. The Fort Sheridan failures, representing an exposure period of 37 months, were in No. 22 gage Bessemer steel, and No. 22 gage low-copper open-hearth steel.

At the Pittsburgh location the failures have been confined mainly to the non-copper-bearing groups of metals.

A program of a series of exposure tests of coated sheet metals, intended to supplement those of the bare sheets, has been drawn up, but the funds and permanent place for a test requiring upward of 15 years have not yet become available.

Committee A-5, before making a final report on the rust resisting qualities of the various grades of metal which are exposed to the atmosphere on the three racks at Annapolis, Pittsburgh and Fort Sheridan, thought it was advisable to find how samples from these identical sheets would act when exposed to running water. Sub-committee V, William A. Cooper, Alan Wood Iron & Steel Co., Conshohocken, Pa., chairman, was accordingly appointed to have charge of these tests.

At the Bureau of Standards, pieces 2 in. wide, cut from each of the sheets which are exposed in the various racks, have been preserved; and the plan of the sub-committee is to cut from these strips, test pieces 2 x 6 in. from the various grades of metal, and expose them to the action of running water: first, at the Bureau of Standards, Washington, D. C., to determine the effect of normal city water supply; second, at the Engineering Experiment Station, United States Naval Academy, Annapolis, Md., for the effect of the brackish water of the Chesapeake Bay; and third, under the care of the Bureau of Mines in the Pittsburgh district, for the effect of the drainage water from a coal mine.

At each of these stations there will be two boxes: one for the No. 16 gage samples of which there will be six samples from each of the 25 grades of metal, and the other box for the No. 22 gage samples, of which there will be six samples from each of the 24 grades of metal. This will make 450 samples of the No. 16 gage and 432 samples of the No. 22 gage in the complete test.

#### Measurements in Metric Units

The expressing measurements in A. S. T. M. Standards in both English and metric units was favored by

committee E-5, but in pursuance of a request from one committee, committee E-5 is to conduct "a comprehensive hearing" which all members of the standing committees who are interested in this important subject will be invited to attend.

#### Magnetic Analysis of Rails

A report on the work of committee A-8 on magnetic analysis was made by Dr. C. W. Burrows, its chairman. The work of Dr. P. H. Dudley of the New York Central Railroad has been continued. One hundred two rails of the 6-in. 105-lb. Dudley section in standard lengths of 33 ft. have been accumulated at the Harmon electric shops of the New York Central Railroad for magnetic surveys and other test purposes. Twenty-seven of these rails have recently been surveyed. The curves obtained as records of permeability have deflections of somewhat greater magnitude than were obtained on the new rails of good quality which were tested some time previously, and reported on at the last annual meeting of the Society. The 27 rails tested to date were all rejected at the plant of manufacture on account of brittleness and failure to meet the drop test requirements of the specifications of the New York Central Railroad. This probably accounts for the more erratic and larger deflections obtained on this lot of 27 rails.

Included in the 102 rails are 24 rolled from four ingots of one melt of steel. Two of the ingots were rolled direct to rails without reheating of the blooms, making twelve rails. The other two ingots were bloomed, reheated and rolled to rails. Surveys are to be made on these rails for comparative purposes. A marked difference in service and quality of rails rolled from reheated blooms as compared to those rolled direct from the ingot has been the experience in the track. The object of making magnetic surveys on rails rolled direct and from the reheated blooms is to detect magnetically differences in properties and homogeneity of the rails rolled under the two methods of manufacture.

#### Other Magnetic Surveys

The General Electric Co. has initiated a magnetic investigation of steel forgings with special reference to turbine bucket wheels. This work is being prosecuted actively and the results are very encouraging. The presence of flaws and segregations and the general degree of perfection of the forging is indicated by the magnetic test.

At the Bureau of Standards especial attention has been given to the study of the correlation between the magnetic properties and the structure and other physical properties of steel. An extended investigation along this line is now in progress. The first report on this investigation is given in a forthcoming scientific paper by Nusbaum, Cheney and Scott on "The Magnetic Reluctivity Relationship as a Criterion of the Structure of a Eutectoid Carbon Steel." A brief discussion of this subject has already been presented before the American Institute of Mining and Metallurgical Engineers.

One member of the committee, Prof. S. R. Williams, Oberlin College, has completed a joint investigation with Sir Robert Hadfield on "Magnetic-Mechanical Analysis of Manganese Steel."

A manufacturer of automobiles has undertaken a magnetic investigation of steel driving pinions. This work has not as yet progressed far enough to give any information on the extent to which the magnetic test can be applied to this class of specimen.

### Some of the Technical Papers Reviewed

THE paper by Dr. James E. Howard is in continuation of the subject matter presented by Waring and Hofamann at the last annual meeting of the society. It deals with the methods whereby interior shattered zones may be located and examined, inferentially leading to the conclusion that shattered zones repre-

sent thermal effects, shrinkage cracks. In rails they are located along the middle of the head and at the junction of the web and base; the forming period is held to be at the time of cooling after the last pass of the rail mill. The shattered zones thus far examined have been confined to hard or medium steels.

In respect to the association of transverse fissures with shattered rails, transverse fissures have been found in rail both with and without shattered heads; and shattered heads have been found without transverse fissures. Thus it appears that a shattered state of the metal is not a necessary precursor to the formation of a transverse fissure.

The paper, a more extended review of which must await a later issue, refers to a physical law explaining why the fissure has an interior origin, based upon the internal strains acquired by the rails in service. Attention is called to the distinction between causes which tend toward the rupture of all rails and the ultimate resistance of different steels whereby some rails resist certain wheel loads while others do not. Rails are not regarded as permanent members in engineering structures by reason of the cold-rolling action of the wheels, which strains the zone of metal next to the top of the head beyond its elastic limit.

George F. Comstock, metallurgical engineer Titanium Alloy Mfg. Co., Niagara Falls, N. Y., in a written discussion, said it would be interesting to know in just how many cases the "shattered condition" was found to stop before reaching the hot-sawed end of a rail. He suggested also the desirability of knowing what proportion of the shattered zones were identified only by the pickling method with strong hot acid, the point being made in the discussion of the Waring and Hofmann paper last year that the method will produce fissures or pits in strained or segregated steel and the marks in the etching of the shattered zones reproduced in the paper resembling very closely the pits due to etching of fine sulphide streaks. "The zones in which these streaks are found are always enclosed by 'walls of sound metal of considerable thickness just as noted by the author."

Dr. Howard, he added, does not state that exfoliation was also met with in new rails. "If new rails are also exfoliated by quenching, this fact cannot be held to support the theory of thermal origin of the shattering cracks. In suggesting the decarbonizing method for showing the shattered condition, the author must feel that slow cooling from the decarbonizing temperature does not cause the internal cracks which are being sought; he states, however, that rapid cooling causes 'rupture from the exterior, or exfoliation.' Why, then, should an intermediate rate of cooling produce an entirely different kind of cracking?"

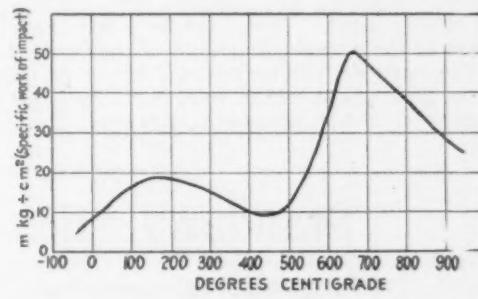
Mr. Comstock expressed the wish to know what proportion of new rails examined showed shattered interiors and why nearly all of them do not show this defect if it is merely a question of thermal effects.

Henry S. Rawdon, physicist, Bureau of Standards, Washington, regarded the method of decarburization described by Dr. Howard as having the same disadvantage that location of the defects by deep etching has; that is, the defect after it has been located cannot be examined in its initial and unchanged condition. Besides, said he, the method is rather time consuming in its operation. He regards the procedure described by himself in the Bureau of Standards paper No. 156 as free from this criticism. In this method steel filings are used on a magnetized specimen. After the defects are located, their positions are marked by a punch mark at each end of the "crack." The specimen may then be cut into pieces of suitable size and each broken by a transverse bend along the line of the located defect. It is possible, he added, by rather deep punch marks to open up the metal along the line of the defect before the specimen is broken. Mr. Rawdon explained that the face of the internal fracture in every case he examined was identical in appearance with that of the usual nucleus of a transverse fissure.

In regard to the statement by Dr. Howard that "there seems to be no inconsistency in believing that brittleness may be displayed by hot as well as cold steel through the action of strains," etc., Mr. Rawdon suggested the property should be revealed by some such test as that of the notched bar impact. He referred to a study by O. Reingold, reported in *Ferrum* in 1916 and from which is copied the accompanying sketch.

The data there plotted cover the entire temperature range of the cooling rail as it leaves the hot saw. The average approximate temperature of rails when they reach the hot saw is slightly above 900 deg. C. (1650 deg. Fahr.) The steel tested was not, of course, of the composition in current American use for rails. All bars tested at a temperature below 525 deg. C. are stated to have broken under impact, those tested above this temperature bent and tore partly in two. There is no evidence of brittleness, Mr. Rawdon contends, in the range of temperature in which it begins to become plastic. The "impact value" is considerably greater than that for the same material at ordinary temperatures. The low "impact value" in the neighborhood of 500 deg. C. is, he emphasizes, striking, and he regards the properties of the material at this approximate temperature as very significant with respect to the behavior of the metal when cooling after rolling; the material is quite sensitive to rough treatment, as the tensile strength is much below that shown at ordinary temperatures and its resistance to shock is at a minimum.

Max H. Wickhorst, engineer of tests American Railroad Association, Chicago, pointed out that the etched worms, as he called them, are not closer than  $\frac{1}{2}$  to  $\frac{1}{4}$  in. from the end of a rail after hot sawing and are not present in the hot rail as it leaves the rolls. He thought that possibly they are the result of the shrinkage from the hot bar. Peering into the



Curve to Show the Temperature Range in Which a Hot Rail May Be Sensitive to Rough Treatment

future and recognizing the vogue for the harder and larger section rails, he suggested that the railroads may possibly some day want a spring steel grade of rail.

Robert Job, vice-president Milton Hersey Co., Ltd., Montreal, Que., was not convinced that there is any relation yet proved between the shattered zones and transverse fissures. With rails of 0.20 per cent carbon and upward we get transverse fissures, and he regarded the troubles as largely due to unsound steel. He asserted that in the face of the great improvements made in other lines, rail mills have practically made no change in the method of manufacture toward getting a better product, but instead, all effort has been for an increase in tonnage, and he hoped that the mills would make the studies so necessary in the matter of the steel rail problem.

J. J. Cone, Robert W. Hunt & Co., saying that it was high time a few plain words were spoken, attributed transverse fissures to the use or possibly the abuse of the gagging or straightening press.

#### Method of Testing Galvanized Coatings

The contribution by Dr. Cushman described a new method of testing galvanized coatings. It depends on placing on the surface to be tested a tinned iron ring properly shaped to fit any given surface. The ring is stoppered with a soft rubber stopper, thereby making a cell by means of which a hydrochloric acid-antimony chloride solution can be run upon the surface and the resulting hydrogen which is formed by the reaction of the acid on the zinc, collected and measured. A tight contact is preserved between the bottom of the metallic ring and the galvanized surface by using a plastic modeling clay. The advantage of the method is that it can be used in the field as well as in the laboratory, and will determine the weight of galvan-

ized coating on the unit area regardless of the convolutions or corrugations, as, for instance, in a finished corrugated culvert, or roofing and sheathing metal.

The method presents the advantage that it is not necessary to cut or otherwise mutilate the sheet or culvert under examination. The spot stripped by the acid can be galvanized in the field, if desired, or can be painted with any available protective paint or compound. The center portions of a finished galvanized culvert can be explored as well as the ends, whereas the practice heretofore has been to examine the ends only. By a slight modification, the method can be used for determining the weight of galvanized coatings on wire, nails or other small units.

It appears that Kauffman & Lattimer, Columbus, Ohio, have arranged to make the apparatus.

#### Molybdenum and Structural Steels

The paper by Dr. Sargent was an exceedingly strong presentation of the value of molybdenum as an alloying element. He showed a number of curves comparing molybdenum and other alloy steels in relation to their reduction of area, ultimate strength, elastic limit and elongation, indicating that the molybdenum steel ranks high in the simultaneous values of tensile strength and ductility. Metallographic and heating and cooling curve studies were presented in explanation of physical properties.

Now that the supply of molybdenum ore in large quantities is assured, Dr. Sargent said, these steels will be widely used. They cost less per pound of alloy used in their production than 3.5 per cent nickel steel. For example, the nickel in a pound of 3.5 per cent nickel steel at 40c. per lb. costs 1.4c. In 1 per cent chromium, 0.25 to 0.50 per cent molybdenum steel with

chromium at 20c. per lb. and molybdenum at \$2 per lb., the alloy costs 0.33c. for the chromium and 0.8c. for molybdenum, a total of 1.13c.

The physical qualities, such as forgeability, machineability, responsiveness to heat treatment, together with the great strength and toughness of these steels, are such that for structural steel elements, such as those entering into the manufacture of machines, automobiles, aeroplanes, etc., where strength and toughness are necessary to meet service conditions, they will be used with the best of results. Among such elements may be mentioned gears, crank shafts, connecting rods, shafts, springs, cams, bearings, etc.

#### Symposium on Testing Apparatus

One whole session was given over to papers on testing apparatus. A high speed alternating torsion testing machine was described by D. J. McAdam, Jr., metallurgist U. S. Naval Engineering Experiment Station, Annapolis, Md.; an elastic limit recorder by C. H. Marshall, Westinghouse Electric & Mfg. Co., Pittsburgh; a new method of calibrating Brinell hardness testing machines by Jesse L. Jones and C. H. Marshall; ductility testing machines by T. Y. Olsen, Tinius Olsen & Co., Philadelphia, and an apparatus for delicate flexure tests by W. J. Franke, vice-president Franke Co., New Brunswick, N. J.

Papers were read also from C. G. Lutts on large chain cable; by H. A. Schwartz, metallurgical engineer National Malleable Castings Co., Indianapolis, on the effect of machining and of cross-section on the tensile properties of malleable cast iron; by W. A. Gibson on fatigue and impact fatigue of aluminum alloys; and by Prof. William Campbell, Columbia University, on tin bearing brasses.

## Standardization of Structural Shapes

### Proposed Anglo-American Standard—Shapes Ordered by Weight Per Foot Only—Decimal System For Expressing Dimensions

ON the entrance of the United States into the war with the Central Powers there came a demand for immediate increase in ship construction which, in turn, meant increased production by the steel mills. To increase production to the maximum and to simplify order practice, a conference of steel makers was held in Washington on July 2, 1917, at which was adopted American standard practice for structural steel for ships.

The result of this action proved distinctly beneficial both to the mills and the shipyards, but was not followed immediately by a standardization of and a reduction in the number of structural shapes used at the yards, and in consequence the Emergency Fleet Corporation undertook an investigation to ascertain definitely the number of structural shapes used in shipbuilding and the possibility of their standardization and reduction in number. As an outcome of these investigations carried on by Fred T. Llewellyn in the division of steel ship construction under Daniel H. Cox, manager, it became possible to determine what were the sections in most general use and at the same time were brought out clearly the divergences in the sections rolled by different mills.

At a conference of steel makers held in Philadelphia on Nov. 19, 1918, inasmuch as the British standard sections of ship channels and shipbuilding bulb angles appeared to be better adapted to economical manufacture than the American standard sections and inasmuch further as the new rolls which had been turned in recent years to produce such sections conformed in general to British standards, it was decided that thereafter American standard sections should be discontinued and that rolls not then to British standards be redressed at as early a date as possible to roll such sections as closely as possible to British standards and this particularly in view of the further fact that the adoption of British standard sections would enable

American mills to compete on an even basis for ship steel wherever utilized in shipyards, either at home or overseas.

The British standard sections thus adopted as American standards were those adopted by the British Engineering Standards Association as published in 1903, and it was not known that this association had undertaken a revision of the British standard sections in 1913, work on which, however, had been suspended by reason of the war activities. When, however, through the trade press, information as to what had been done in the United States came to the attention of the British Engineering Standards Association, that association advised American steel makers as to the situation and later through their secretary, Mr. LeMaistre, expressed their desire to have the American structural trade co-operate with the British Engineering Standards Association in the formulation of common Anglo-American standards for structural shapes.

At the instance of the Association of American Steel Manufacturers, a sectional committee on steel shapes was organized under the auspices of the American Engineering Standards Committee. This sectional committee is composed as follows:

American Bureau of Shipping: Capt. C. A. McAllister, David Arnott, John Martin.

American Society of Civil Engineers: J. H. Edwards, J. B. French, H. G. Balcolm.

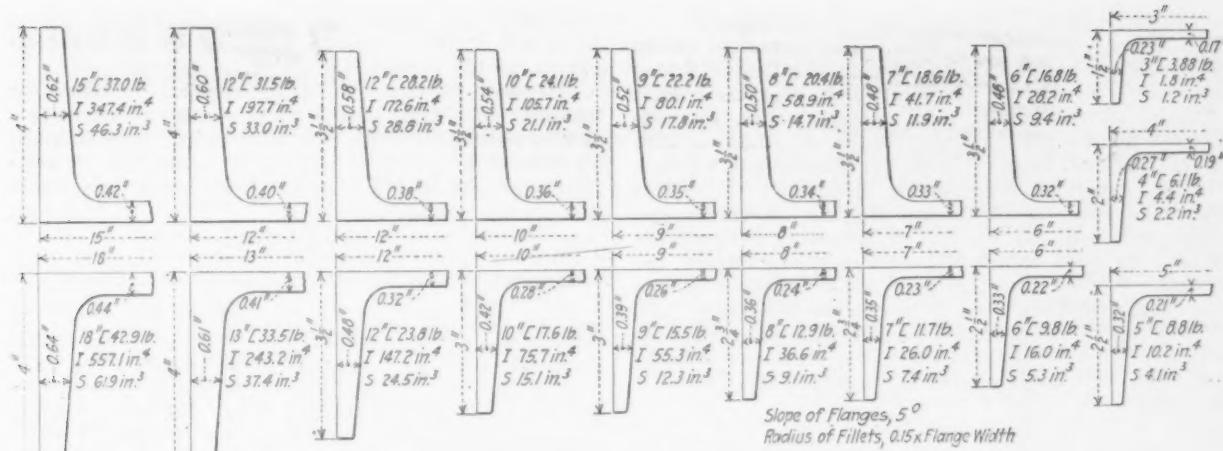
Association of American Steel Manufacturers: R. B. Woodworth, chairman; G. H. Blakeley, George E. Thackray.

Railway Car Manufacturers' Association: A. E. Ostrander.

Society of Naval Architects and Marine Engineers: Fred T. Llewellyn, E. H. Rigg, J. W. Stewart.

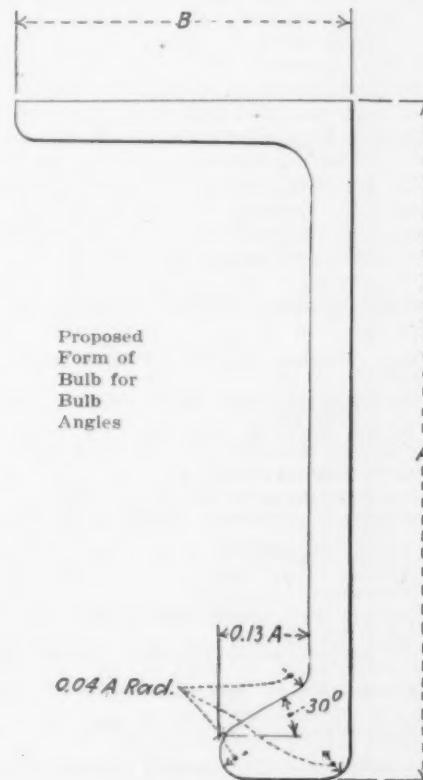
United States Navy: Commander C. M. Simmers, Lieut.-Com. H. D. Rouzer.

The sectional committee gave careful consideration to the entire routine of structural practice in the United States not only as it affects the profiles of



structural shapes themselves, but also as regards methods of order practice, calculation and publication of weights, areas and properties, etc., with the idea to insure as far as possible a complete accord between makers and users wherever the sections rolled in English-speaking lands were used. At its meeting held on April 27, 1920, it formulated its recommendations for submission to its sponsor organizations, to the American Engineering Standards Committee and to the British Engineering Standards Association as a basis for common Anglo-American standards, and its conclusions are now to go before these organizations for further discussion and endorsement. The essential features of these recommendations are—

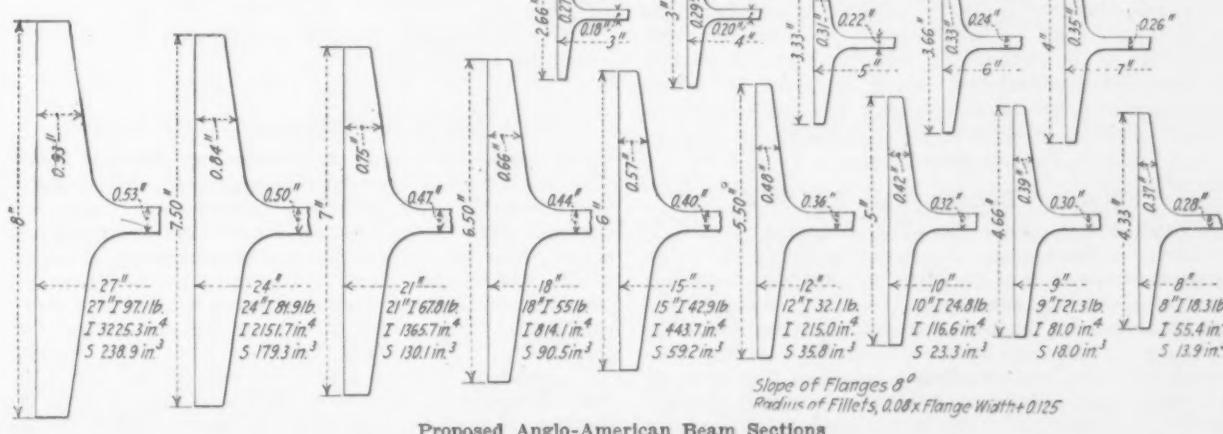
1. The adoption of the decimal system for the expression of dimensions, thicknesses and other elements of order practice.
2. The adoption as an Anglo-American standard of the standard order practice adopted by the Association of American Steel Manufacturers on Feb. 20, 1920, under which structural shapes are to be ordered by weights per foot and not by thickness.
3. The adoption as an Anglo-American standard of American standard practice as it relates to ranges of thicknesses, methods of computation and methods of publication.
4. The adoption of definite ranges in thicknesses of angles and other structural shapes, under which are established two zones of variations between minimum and maximum thicknesses. Under 0.60-in. thick variations are fixed at 0.04-in. and above 0.60-in. thick at 0.08-in.
5. Included in the list of angles is an equal angle (9 x 9-in.) and four unequal angles (8 x 4, 9 x 4, 9 x 6 and 10 x 4), which are not now rolled in United States, but are subject to the considerations which weigh with manufacturers when new rolls are contemplated.
6. The adoption of a new line of bulb angle sections as proposed by the British Engineering Standards Association that are recommended on account of their greater efficiency as compared with present British and American standards.
7. The adoption of a single line of channel sections with a 5 deg. flange taper to displace the present two American lines, the structural line with its flange taper 9 deg. 27 min. 42 sec. and the shipbuilding line with its flange taper of 2 deg. This line of channel sections is not quite in accord with that proposed by the British Engineering Standards Association, but is believed to be more suitable to the requirements of the American trade and better proportioned.
8. The adoption of a new line of beam sections to take the place of the present American standards adopted in 1896. These sections have wider flanges than present American standards and do not agree very closely with the British proposals, but are believed by the sectional committee to be more nearly in accord with the recent developments in the fabrication of buildings and bridges.



#### Standardization of Nuts and Bolt Heads

The Swiss Standards Association has addressed a communication to the national engineering standardizing bodies of the various countries, proposing the international standardization of the widths across flats on nuts and bolt heads.

The proposal covers the range of  $\frac{1}{4}$ -in. (6mm),



3-in. (8mm), diameter of bolts. The numerical values proposed are a compromise between the United States Standard, the British or Whitworth, and the metric system international. The communication was addressed to the standardizing bodies of America, Belgium, England, France, Germany, Holland and Sweden.

The American Engineering Standards Committee has requested the American Society of Mechanical Engineers and the Society of Automotive Engineers to act as joint sponsors in the matter, leaving the decision to the joint sponsors as to whether a new sectional committee shall be organized for the project, or whether the work should be done by a sub-committee composed of the sectional committee on screw threads, for which the same two societies are acting as joint sponsors.

#### Standardization of Plain Limit Gages

A sectional committee of the American Engineering Standards Committee has just been organized to undertake the standardization of plain cylindrical gages for general engineering work, under the sponsorship of The American Society of Mechanical Engineers. The immediate occasion for undertaking the work was a request of the British Engineering Standards Association for co-operation on the subject. The committee held its organization meeting on June 11. It is understood that this committee will recommend to the American Engineering Standards Committee that the scope of the work should be broadened so as to cover all plain limit gages for general engineering work.

The present personnel of the committee is as follows:

E. C. Peck, chairman, general superintendent, Cleveland Twist Drill Co.

L. D. Burlingame, vice-chairman, industrial superintendent, Brown & Sharpe Mfg. Co.

H. W. Bearce, secretary, gage department, Bureau of Standards, secretary National Screw Thread Commission.

P. W. Abbott, Lincoln Motor Co.

John Bath, president, John Bath & Co., Inc.

Earle Buckingham, engineer of standards, Pratt & Whitney Co.

Fred H. Colvin, associate editor *American Machinist*.

W. A. Gabriel, chief draftsman and designer Elgin National Watch Co.

F. O. Hoagland, vice president and works manager, Bilton Machine Tool Co.

Edward H. Ingram, works manager Cleveland Drilling Machine Co.

J. O. Johnson, office of chief of ordnance, War Department.

A. W. Schoof, gage engineer, Greenfield Tap & Die Corporation.

G. T. Trundle, consulting engineer, Engineers Building, Cleveland, Ohio.

H. L. VanKeuren, VanKeuren Co.

#### Standardization of Shafting

The American Engineering Standards Committee has invited the American Society of Mechanical Engineers to act as sponsor for the standardization of shafting. The society has already done a considerable amount of work on a set of standard diameters for transmission and machinery shafting. It is proposed that the work, which will be carried out by a sectional committee working under the rules of procedure of the A. E. S. C., shall be broadened to include the standardization of the method of determining what diameters of transmission shafting should be used for given loads, the dimensions of shafting keys and keyways, and the setting of dimensional tolerances.

#### Shipping Board's Plan for Sales

WASHINGTON, June 29.—The Shipping Board is preparing to launch an extensive advertising campaign to promote the sale of its ships and surplus materials. Various provisions relative to the advertising of sales are contained in the new merchant marine act. The Shipping Board plans to go farther than merely complying with the law, its officials believing that through an educational campaign conducted through the advertising columns of newspapers and magazines interest in shipping can be promoted to such an extent

as to aid in the necessary financing by private companies, of the purchase of ships.

Herman F. Laue has been appointed advertising manager in charge of the Shipping Board campaign. Before actually placing the advertising, he will make an extensive survey of the entire situation. A committee of advertising men has been co-operating with him on the proposition.

#### Report of the American Car & Foundry Co.

The chief contrast in the annual report of the American Car & Foundry Co., for the year ending April 30, 1920, as compared with the preceding year is in regard to the item, amount of materials on hand, \$15,007,108, representing the value this year, against \$46,276,398 in 1919. Surplus, after charges, Federal taxes and preferred dividends amounted to \$8,301,192 for the current year, against \$9,671,813 the year before, or \$27.67 a share compared with \$32.23. Total profits, after Federal taxes, amounted to \$14,382,565, a decrease of \$2,890,607. The balance, after common dividends, amounted to \$4,701,192, a decrease of \$2,570,621.

The reserve for common dividends reached \$10,800,000 by the addition of \$3,600,000. The reserve for improvements and maintenance was lower than in the preceding year, being \$3,085,011, as compared with \$4,101,967.

W. H. Woodin, president, calls attention to the business transacted with the Railroad Administration and says that progress is being made in settling accounts, which, he believes, will show "a satisfactory aggregate profit." In regard to present conditions, he says:

The need of the railroads both for the repair of old and the acquiring of new equipment is great and insistent. Their problem is to finance the enormous expenditure necessary. Upon the successful handling of that will depend in large measure the prosperity of the country. Happily, the public and Congress are coming to a recognition of the just claims of the roads. The legislation already referred to contains provisions for governmental aid where needed. The commission is authorized to loan money to the roads, and where necessary to acquire equipment for their use. By the operation of these provisions or otherwise it is to be expected that the railroads will be financed to the extent of their necessities—and there is every reason to believe that the company will get its fair share of the resulting business.

#### Proposed Engineering Building in Chicago

The American Association of Engineers, 65 East Adams Street, Chicago, has through its board of directors, accepted the report of the building trustees, announcing that three types of buildings are under consideration; one type costing \$3,000,000, another \$1,500,000 and the third \$500,000. Subscription blanks are to be sent to members as a means of determining the amount of money which may be raised.

Club certificates have been conferred to members petitioning from York, Pa., Point Pleasant, W. Va., and Pontiac, Mich.

The North Carolina Society of Engineers is planning an amalgamation with the American Association of Engineers.

The Washington chapter is reported to have 425 members and applicants.

#### New Crane Manufacturer Incorporates

The O'Rourke Crane & Engineering Co., 366 Fifth Avenue, New York, recently incorporated, will specialize in electric overhead cranes, derricks and hoists for docks, terminals, industrial plants and construction work. The crane will be manufactured at Hudson, N. Y. Officers of the company are: F. E. O'Rourke, president and general manager, formerly assistant general manager in charge of engineering and design for the Edward F. Terry Mfg. Co., New York; P. R. Moses, vice-president, who is connected with M. M. Davis & Son, shipbuilders, Solomons, Md., and Moses, Pope & Trainer, New York, consulting engineers; and John N. Trainer, treasurer.

## Safety Engineering Meeting in Chicago

The engineering section of the National Safety Council, co-operating with the Western Society of Engineers, held its summer meeting on June 24 at the rooms of the latter organization in Chicago. A number of papers were read, all dealing with the progress which is being made in the adoption of safety devices and methods.

H. A. Schultz, United States Steel Corporation, reported for the committee on safeguarding machinery at its source. He said that the first work of the committee was to enlist the co-operation of the American Society of Mechanical Engineers and the National Machine Tool Builders' Association. "That this pioneer work was in a measure successful," said Mr. Schultz, "we have but to turn to the advertising pages of such publications as *THE IRON AGE*, *Machinery* and *American Machinist*, where page after page show machines pictured with hazardous points guarded. It is true that the guarding is not always adequate, and also that the manufacturer sometimes fails to guard all of the hazardous points, but on the other hand think of the advertising pages of 10 or 15 years ago. In those days the gears, power transmissions, etc., were devoid of any covering."

Mr. Schultz said further that safety specifications should be based upon practical, recognized safety standards and should be drawn up in a form so that they may be included and used as a whole, or in part, for any contract for construction work, or for purchase and installation of machinery and equipment. A set of safety specifications, he said, should be attached to, or embodied in, general specifications when originally submitted to contractors or manufacturers for bids. In this manner the contractor or manufacturer will be fully advised as to the safety requirements and these features will be included and properly taken care of during the process of construction. He urged members to work with the manufacturers of machines not now properly safeguarded in an effort to persuade them to re-design their machines, if necessary, to include proper protection for operators.

H. E. Somes, electrical engineer, Chevrolet Motor Co., Flint, Mich., discussed the advantages of cone pulley belt shifters. He said that his company has arranged to conduct a test of various types of belt shifters at its Flint plant, and results of the test will be reported later to the National Safety Council.

W. D. Keefer, secretary of the committee on education, submitted a report dealing with the best methods of teaching safety engineering in universities and colleges. He said that he believed the time was not yet ripe for the preparation of a college text-book on safety.

Reports were submitted also showing progress in the adoption of safety codes.

At the afternoon meeting F. J. Littell, F. J. Littell Machine Co., demonstrated an automatic feed for power presses and A. L. Kaems, safety engineer, Simmons Co., Kenosha, Wis., told how his company had increased production by safeguarding power press operation.

"How We Can Increase Production" was the subject of an address delivered at the dinner at the La Salle Hotel in the evening by Sidney J. Williams, secretary and chief engineer National Safety Council. Other speakers were George A. Hart, superintendent Melrose plant, National Malleable Castings Co., and W. G. Nichols, president American Manganese Steel Co.

The Adair-Day Corporation has opened an office at 1025 Widener Building, Philadelphia, and will handle iron and steel products and mechanical specialties. The company was organized by Craig Adair, formerly vice-president of the Penn Seaboard Steel Corporation, and Paul Day of the same company, who resigned to organize the new business.

The Wickwire-Spencer Steel Corporation plans extensive building operations this summer at Palmer, Mass., to provide homes for its Palmer wire mill employees.

## Tests of High Speed Twist Drills

At the joint convention of the Railway Master Mechanics and Master Car Builders held at Atlantic City June 15 and 16, much interest was aroused in a series of drilling tests showing remarkable speeds in drilling operations with high-speed drills. The tests were in connection with the exhibit of the Cleveland Twist Drill Co. and made with the Cleveland milled high-speed drills used on a Foote-Burt heavy duty drill press.

In these tests a 1-in. and 1 1/4-in. drill cut through cast iron at a rate of 72 in. per minute, through machinery steel at a rate of 30 in. per minute for the smaller drill and 20 in. for the larger. These are declared to be world breaking drilling records. It is interesting to compare these drilling speeds with those attained in similar tests conducted by the same company at the same conventions in 1911 when with Paragon high-speed Flat twist 1 1/4-in. drills a speed of 57 1/2 in. per minute was attained in cast iron and 10 1/2 in. per minute in steel. The details of the test:

*Drilling Records Made at Atlantic City, June 15-16, 1920.*

| Material           | Size of Drill, In. | R. P. M. | Feed Per Rev. | Peripheral Speed in Ft. Per Min. | Perf. Per Min. | Vol. Remov. Cu. In. |
|--------------------|--------------------|----------|---------------|----------------------------------|----------------|---------------------|
| 3-in. cast steel.. | 1                  | 720      | 0.100         | 188                              | 72             | 56.62               |
| 3-in. mchy. steel  | 1                  | 600      | 0.050         | 158                              | 30             | 23.59               |
| 3-in. cast iron..  | 1 1/4              | 720      | 0.100         | 238                              | 12             | 38.36               |
| 3-in. mchy. steel  | 1 1/4              | 500      | 0.040         | 163                              | 20             | 24.54               |

The number of inches drilled in the first case was 9; in the second and fourth, 3 in., and in the third, 15 in.

The following comments on the tests are made by the Cleveland Twist Drill Co.

"Obviously the above records, far outdistancing any previous records, would not be recommended as good commercial shop practice. Few, if any, shops would have the press equipment or the power to duplicate these records. For example, in making the record in cast iron with a 1-in. drill, we ran with a feed of 0.100 per rev. and at 720 r.p.m. Good shop practice would indicate a speed of not greater than 267 r.p.m. and a feed of approximately 0.015. In the tests you will observe, both feed and speed far exceeded normal practice. The same applies to the record in machinery steel where the r.p.m. was 600 and the feed 0.050.

"Demonstrations such as these show, as could be shown in no other way, the tremendous reserve in the modern high-speed milled twist drill. We are already familiar with the economics of the high-speed drill even though these economics are being practiced by only a comparatively small percentage of manufacturers, but how many of us realize the enormously increased output latent in the modern milled high-speed drill? Few of us, indeed, we feel sure.

"Such records as the above should be a beacon light to the manufacturers of the country in their endeavor to obtain greater per man production. Obviously the productive limit of twist drill has not been scratched. These records graphically demonstrate the possibilities still open to our manufacturers when each individual factor surrounding modern drilling is correct. You will realize that these records, which were made with stock drills, represent a grueling test."

## War Bureaus Dissolved

WASHINGTON, June 29.—The War Department Bureau of Appraisers and War Department Bureau of Contract Adjustment will be dissolved on July 1. Their functions will be transferred to the War Department Claims Board, which will reorganize the appraisal section and an appeal section for the purpose of handling these new duties.

The War Department Claims Board as constituted on July 1 will continue under the Assistant Secretary of War, who may from time to time appoint additional members of the board. It will continue to direct and control the work and personnel of several board of claims boards which have heretofore existed.

## SHORT TRADE ITEMS

The Worthington Pump & Machinery Corporation, New York, has purchased from the Platt Iron Works, Dayton, Ohio, its drawings, patterns, jigs, templates, special tools, good-will and name, on the following lines of its product: Oil mill machinery, suitable for the extraction of oil from all sorts of nut and seed products; hydraulic turbine and water wheel line; feed water heaters, steel and cast-iron; high pressure air compressors for torpedo and other high pressure charging, cleaning and discharging.

Arrangements have been completed whereby the Pennsylvania-Ohio Electric Co., operating power and interurban railway properties in Mahoning and Trumbull counties in Ohio and Mercer and Lawrence in Pennsylvania, will extend its electric power line from the vicinity of Boardman to Columbiana, in Columbiana county, to meet the growing need for electric power for industrial purposes. The line which will be extended connects the central power station of the utility at Lowellville, Ohio, with the plate mills of the Brier Hill Steel Co., about 17 miles distant.

Branch managers and salesmen in the metal furniture department were entertained last week at the home office and plant by the General Fireproofing Co., Youngstown, Ohio, and were instructed in the manufacture of metal furniture. During the sessions addresses were given by Lee A. Smith, manager of sales, by S. S. French, vice-president and general manager, and by other officials. R. J. Kaylor, publicity manager of the Youngstown Sheet & Tube Co., delivered his illustrated talk on the manufacture of iron and steel.

C. F. Drozeski, D. A. Drozeski and F. T. Kennedy have purchased the plant formerly owned by the Franklin Park Foundry Co., Franklin Park, Ill., a suburb of Chicago. The plant consists of a malleable foundry 72 x 432 ft., in which are installed two 12-ton air furnaces. It has a capacity of approximately 450 tons of malleable castings per month. There is also a gray iron foundry, 72 x 160 ft., which has a capacity of about 300 tons per month. It is expected that the plant will be ready for production Aug. 1 or as soon as necessary supplies of raw material are secured. The new company will probably be known as the Central Malleable Castings Co.

The Memphis Iron & Steel Co., Memphis, Tenn., has completed plans for its proposed new local plant to be used for the manufacture of bar and flat steel, primarily for railroad work. The company has a site of about 5 acres on the Belt Line Railroad and the initial works will comprise a number of buildings, estimated to cost about \$300,000, including machinery. At a later date, it is proposed to extend the plant for departments for the manufacture of fabricated steel sections. B. L. Mallory and John E. Conley head the company.

The North Jersey Steel Co., Dover, N. J., has been incorporated with a capital of \$500,000 by Harry M. Roche, Jesse C. Stoddard and Ernest E. Yensel, to manufacture iron and steel products, and operate iron ore properties in that section. The new company will acquire the lands now held by Mr. Roche, forming a portion of the properties of David Misel, land of the Beach Glen Iron Mining Co., and those of the estate of Andrew B. Cobb. Mr. Yensel, one of the incorporators, was formerly local manager for the New Jersey Power & Light Co.

The Koppers Seaboard Coke Co., Jersey City, N. J., has acquired property on the Gowanus Canal, Brooklyn, 225x354 ft., to be used as a site for works in this district.

A notice has appeared in several papers that a receiver has been appointed for Rogers Brown & Co.,

Inc., a company which deals in vegetable oils with headquarters at Seattle, Wash., and branches in various cities. The company has no connection with Rogers, Brown & Co., the well-known dealers in pig iron and coke, with offices in Cincinnati and eight other cities.

The Midstates Engineering Co., Westminster Building, Chicago, has been incorporated as consultant, specializing in industrial, power and plant engineering. The equipment and commercial division activities will be directed by J. H. Milliken, who has had experience as an industrial sales manager. The engineering work will be executed by R. J. Gaudy, president, who was formerly with the Sessions Engineering Co.

It is estimated that the combined output for 1920 of the Ford Motor Company and the General Motors Corporation will represent about 65 per cent of the total output of the 400 or more factories in the country devoted to manufacture of motor cars and trucks. Last year's total of the 400 factories was 1,974,016; this year the aggregate is expected to reach 2,450,000.

The New Castle Foundry Co. is erecting a new plant on the East Side, New Castle, Pa., which it is expected will be ready for production about the middle of July. Gray iron castings will be produced. The initial building of the new plant is 50 x 200 ft. Officers of the company are Harry Conner, president; George A. Stone, vice-president and treasurer; F. E. Sowersby, secretary.

The Ohio Cities Gas Co., Columbus, Ohio, has changed its name to the Pure Oil Co. The latter name is not entirely a new one, for the Pure Oil Co. has been a subsidiary of the Ohio Cities Gas Co. since 1917. The company's assets aggregate more than \$131,600,000. Its operations cover nine States and it has over 16,500 stockholders.

An open competitive examination for metallurgist is announced by the United States Civil Service Examination to fill a vacancy in the Navy Yard, Norfolk, Va., at \$10.80 per diem. Applicants should at once apply for Form 1312.

For purpose of adjusting fractional shares, the Youngstown Sheet & Tube Co. placed a value of \$400 on its common stock in distributing a common stock dividend of 15,034 shares on July 1. The stock distribution amounts to 8.12 per cent on the total common outstanding and was made in order to adjust the common in anticipation of the issue of new non-par value stock.

The Matthew Addy Co., coal dealer, Cincinnati, which was recently convicted of charging a profit in excess of the sum laid down by President Wilson, was fined \$1,000 and costs by Judge Peck in the United States District Court at Cincinnati. B. N. Ford, vice-president of the company, was fined a similar amount. Appeals from the convictions will be entered.

The Aetna Steel Castings Co., Lorain, Ohio, has placed an order with the McLain-Carter Furnace Co., Milwaukee, for a second 5-ton open-hearth furnace. The Aetna company has operated a similar furnace for several months and in a number of instances has melted five tons of steel in two hours and 15 minutes.

Work was started recently at the plant of the Ohio Steel Castings Co., Springfield, Ohio, on the erection of an addition which will be used to house a new electric annealing furnace which will be installed and ready for operation in about two months. The addition will cost about \$25,000.

The Cyclops Steel Co., Dayton, Ohio, has opened a warehouse in that city and is carrying a stock of high-speed and carbon tool steels.

The steamship Birmingham City left Mobile on June 21 for Yokohama via San Francisco and Honolulu with a cargo of Birmingham steel.

## STEEL WORKS COST REPORTS

### Federal Trade Commission Not in Contempt, but Its Hands Are Still Tied

WASHINGTON, June 29.—An effort to have the Federal Trade Commission adjudged in contempt for disregarding the order of the District of Columbia Supreme Court, restraining its activities in compelling iron and steel companies to answer monthly questionnaires as to cost of production, proved unsuccessful. Justice Bailey dismissed the application of the Claire Furnace Co. of Pennsylvania, and 22 other iron and steel concerns. The court held that no contempt had been shown.

The contempt proceedings were based on the mandamus suits which are pending against the Republic Iron & Steel Co. at Trenton, N. J., and the Bethlehem Steel Co. at Philadelphia, these suits having been brought to compel the two companies to furnish details of costs. It was contended by the steel companies that these cases should not be proceeded with while the order granted recently by Justice Bailey is in effect.

Attorneys for the Federal Trade Commission intend to ask Justice Bailey for a modification of the original restraining order which will specifically authorize the commission to go ahead with arguments in the mandamus suits at Trenton and Philadelphia. The Department of Justice is handling these cases for the commission. The commission contends that it has authority to proceed, but wants a definite ruling on the question. Under the decision of the Supreme Court of the District of Columbia, as reported in this correspondence last week, the order restraining the Federal Trade Commission from compelling various iron and steel companies to make monthly reports of costs, etc., is continued for the present. If the Federal Trade Commission wishes to have further argument on the matter it must give ten days notice.

### Operating Open-Hearth Furnaces With Coke-Oven Gas

The operation of open-hearth furnaces with cold coke-oven gas is discussed by Fr. Springornm in *Stahl und Eisen*, Jan. 1, 1920, and in *Zeitschrift des Vereines deutscher Ingenieure*, Jan. 24, 1920. The author discusses experiments at the Hoesch Steel Works. An abstract from *Technical Review*, London, follows:

The experiments were started in 1913. A 30-ton furnace, heated with producer gas and fitted with ordinary ends, was altered according to März's suggestions and heated with coke-oven gas. These attempts having proved satisfactory, a second 30-ton furnace was laid down in 1913, while in 1914 three 100-ton furnaces were installed in the new open-hearth plant to run on coke-oven gas. As regards the modifications made in the furnace for the new system of heating, one was a new wrought-iron water-cooled tuyère 120 mm. in diameter, which was built in for conducting the gas to the hearth space. The tuyères have proved very satisfactory. Experience in working has shown that the calorific value of the gas is the deciding factor as regards the economy of the method. At the outset this value was 4300 to 4500 large calories, the gas consumption working out at 300 cu. m. per ton of steel produced. In this connection the larger furnaces were more satisfactory than the small ones.

The duration of a 30-ton heat was 5 to 6 hr., and of a 100-ton heat about 9 hr. Later on, the extraction of benzol and other factors caused the calorific value to deteriorate and it fell to 4000 cal., the duration of heat rising accordingly. In the case of the 30-ton furnace, melting at a calorific value of 3800 cal. was uneconomical, whereas the larger furnaces were less sensitive.

Considerable hearth space is required for the perfect combustion of the coke-oven gas, as the velocity of admission is high and the fine jet of coke-oven gas must first of all be expanded by the application of heat so as to mix thoroughly with the air. The larger furnaces are more satisfactory in that respect.

The writer indicates the following advantages attendant on heating: Coke-oven gas is anhydrous and poor in sulphur, so that it is possible, owing to the high hydrogen content, easily to provide a reducing atmosphere over the

bath, which is of great advantage in the production of high-quality steel for preventing excessive oxidation and decarburization. The manganese consumption is lower throughout than when working with producer gas. Coke-oven gas burns with an almost invisible flame, so that the whole bath can easily be inspected. In addition, a saving was effected in refractory bricks, in wages and steam; and, further, running on producer gas can be entirely excluded.

### Charged With Conspiring to Defraud in Sale of Stock

Lakin C. Taylor, president, and W. C. Watkins, auditor of the Pittsburgh Tin Plate & Steel Corporation, Pittsburgh, were arrested in Pittsburgh on June 25, by city and county detectives, charged with conspiring to cheat and defraud in the sale of stock. According to Charles B. Prichard, city director of public safety, more than \$1,000,000 worth of stock of the company has been sold, most of it in the Pittsburgh district, at from \$10 to \$14 per share. It is alleged that the capacity of the company's plant and the assets of the company were exaggerated. The company has a plant at Marietta, Ohio, on which Mr. Prichard says the promoters obtained an option several years ago at a nominal figure. The plant was sold to a company styled the Pittsburgh Sheet & Tin Plate Co. for \$300,000, according to Mr. Prichard's investigations. This company later was dissolved, and the stock sold to the Pittsburgh Tin Plate & Steel Corporation, a Delaware corporation.

An active stock-selling campaign has been conducted for several months, and few Pittsburghers have failed to receive a prospectus of the promoters. This pamphlet has a picture purporting to be that of a plant at Marietta, Ohio, but the authorities declare that the picture is not a photograph of the actual building, but an illustration made from an architect's drawing. The prospectus gives the company's capitalization as \$12,000,000, equally divided between common and preferred shares with a par value of \$10. Officers of the corporation are set forth as follows: President, L. C. Taylor; treasurer, D. C. Kiester; secretary and assistant treasurer, J. W. White; manager, R. C. Whitehill; assistant general counsel, Edward A. Kraus, Jr.; auditor, H. T. Wulfe.

After his arrest Mr. Watkins made this statement: "The arrests are an outrage. The books and all the dealings of the corporation are open to the public, and we invite investigation. The high-handed manner of these police officials is beyond me, as but last week our corporation passed the blue-sky laws of West Virginia. We obtained a permit to sell stock in this city from the city solicitor last February. If there had been anything wrong with our corporation, the permit would not have been granted."

The trustees of the estate of W. J. Rainey announce that the business heretofore carried on under the name of W. J. Rainey has been incorporated and hereafter will be conducted as W. J. Rainey, Inc. The officers of the new corporation are: Roy A. Rainey, chairman of the board; Scott Stewart, president and treasurer; L. L. Willard, vice-president in charge of operations; John McElwain, vice-president in charge of sales and purchases of raw materials; H. R. Ahrens, secretary. The executive offices of the company will remain at 52 Vanderbilt Avenue, New York.

Effective July 1, the International Fuel & Iron Corporation, Pittsburgh, a new corporation, takes over the business of the International Fuel Corporation together with the business of the Superba Coal & Coke Co., Pittsburgh, and the Industrial Coal & Coke Corporation, New York.

The Lake Erie Steel & Wire Co., Cleveland, will enlarge its plant at Bedford, Ohio, by the erection of a new bar mill department, 50 x 200 ft., machine shop, 20 x 50 ft., and an addition to the shipping department, 20 x 50 ft. The bar department will be equipped to make cold-rolled bars up to 3 in. in diameter.

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# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

CHARLES S. BAUR, *Advertising Manager*

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## Some Gains from High Prices

So much has been said about the evils of high prices for commodities and services, that it may be well to give a little attention to the other side. The compensations of high prices are neither few nor insignificant. In coal, for instance, it has been pointed out for years that we are very wasteful in our manner of consumption, and the rejoinder has often been made that it really does not pay to save coal. But it might be better if a smaller percentage of the population were devoted to producing coal, so that the men released could be adding to our supplies of other things; also, if a smaller proportion of our railroad capacity were used for transporting coal, permitting the released capacity to carry something else.

If a coal consumer has been using 5000 tons of coal a year, costing him \$10,000, it would be better for society if he made improvements so as to get along with 2000 tons of coal and the 2000 tons still cost him \$10,000. The consumer is entitled to be served with coal, but society is better off if only two-fifths as much work is done in serving him.

The cost of erecting dwelling houses is extremely high, and that works untold hardship upon the people; but the high cost causes architects to study as never before to economize in labor and materials, and to produce the most attractive and efficient designs. If it costs \$10,000 instead of \$5,000 to build a certain sized house, more brains will be put into the architecture. The result is more pleasing to the passerby, and valuable experience is gained, which will remain when building costs come down.

The cost of labor is very high, and this induces men to think harder than ever before to devise means for saving labor. That is an economic advantage that cannot be lost. A labor-saving idea or device once introduced would hardly be abandoned if the cost of labor came down.

Locomotives and freight cars are extremely high priced, and in consequence railroad managers will endeavor to get more miles per day from both, and it is to be hoped will endeavor to have them so handled as to reduce time lost for repairs. The fewer cars and locomotives needed to render

the requisite service the better, for society is saved the trouble of building them, the material is saved, and fewer miles of track are required for the rolling stock to run upon.

The great cry to-day is that in this period we are extravagant, but the extravagance referred to is chiefly an extravagance in the use of money. From our present viewpoint, however, we can see that in times past we were extravagant in the use of materials and labor. As a whole people we are not so seriously hurt by extravagance in personal expenditure, for the money simply passes from one hand to another. When we are extravagant with materials and labor, on the other hand, we all lose. Society loses when things are not done efficiently, and high prices have promoted many kinds of efficiency.

## Criticism Without Progress

A long range view of human affairs shows readily enough that the times are out of joint. We are not making material progress, and if we are making progress toward a better mental state the outward signs are not well marked. Seeing that we have lived, or existed, more than a year and a half since the cessation of hostilities the progress, if any, is disappointingly slow.

There has been a good bit of preaching about the existence of a wrong mental condition, but there is reason to think this preaching has done harm rather than good. One observes readily enough that those who preach about wrong mental attitudes are always referring to some one else. You and I are all right, but the third party is a bad actor. That is calculated to discourage two of us from trying to be good and does not encourage the third party to attempt to mend his ways. For example, one ponderous editorial after another has been printed in the daily press about the "outlaw" rail strikes, which do not seem to aim at anything except to indicate that there are a good many bad men in the country.

The daily press may not always reflect the state of the public mind, but at the present time there is no particular difference between what is printed and what is heard on the street and else-

where. The whole mental state is one of dissatisfaction and criticism. Society cannot progress if it does not have ideals and ambitions, involving a mental state which is now lacking. The present mental state must be purged of its distempers. No useful result can come from two men getting together and criticising a third and absent person, to the mutual satisfaction of those present.

Of course the condition is a result of the war, but that is a general statement, of no value for suggesting remedies. It is not a necessary or direct result of a war such as has occurred, or of any other kind of a war. If it were merely a case of the human mind having to experience certain reactions in passing from the state natural to war to the state natural to peace sufficient time has certainly elapsed for the gamut to have been run.

If it is a case of economic laws having to run their course, that is an entirely different matter, and much time may be required. It is necessary to recover from the conditions which the war left and conditions which developed after the war, though as a result of the war. Economic laws are not reducible to mathematical formulas, for the human element enters, particularly as to the length of time involved in the economic results working out. For instance, just now the people or a majority of the people, are charged with "extravagance," but economics cannot work out a formula showing how many months will be required for the people to mend their ways. According to the mental state, they will see their error sooner or later; but apparently the reiteration that some men are extravagant tends rather to make other men extravagant also.

As to the mental states commonly found affecting the relations between employers and employees, on each side the majority seems disposed to be critical rather than constructive and progressive. Among labor unions the common view is simply that now is the time to get everything in sight, while among employers the view is certainly not uncommon that we need an industrial depression to set matters right. There is much temporizing on both sides. What is won by force may be lost in time and the condition produced by industrial depression will be modified upon the resumption of industrial activity.

When there is more temperate discussion and less criticism, and when more is heard of the constructive things men are doing than of the combative and retaliatory things they are doing, society will be making some real progress toward a safe and sane condition.

A new high mark in the rising tide of British steel exports is revealed by the figures for May which have just been received. The total was 332,869 gross tons, the largest for any month this year and larger than for any month in 1917, 1918 and 1919. In fact, in the last five years, this figure has been exceeded in only two months, July, 1915, and May, 1916. An interesting fact is that the May exports this year are nearer the American rate than in several recent years. American exports in 1919 averaged 353,300 tons per month, and to May 1, this year, 363,530 tons per month. The extent of the British recovery is represented by the

difference between 332,800 tons, the May record, and 420,700 tons per month in 1913, Great Britain's best export year. The gain in May over April of this year, nearly 60,000 tons, represents principally bars, plates and sheets, both black and galvanized. In imports also a decided increase was recorded in May, at 83,431 tons. This is the largest total for any month this year and was exceeded in 1919 by only one month, October, with 87,892 tons. The May imports exceeded the monthly average for 1916, 1917, 1918 and 1919.

### Listing Materials by Suitability

By suggestion rather than by direct statement, President Capp of the American Society for Testing Materials in his address at the society's annual meeting last week pointed the way to further increasing the usefulness of the institution. Its notable work of studying testing methods and testing machinery and thus of creating a basis for specification building is far from being complete, if indeed it may not be regarded as merely well begun. But, according to Mr. Capp, the society may well set up as a part of its program of activities the classification of the materials of engineering in relation to the uses to which they may be put.

There is no doubt that various materials are often differentiated in designers' minds solely in terms of their behavior under common forms of physical or mechanical testing. The properties which these materials are required to have in the structure in which they are to go may not be adequately determined by such tests. Instead of resistance to shear or flexure being of prime importance, for example, it may be that frictional resistance or low resistance to heat flow or other factors should be given equal or first attention. There is also a proneness in designing to use in calculations well established test data, though subsequent improvements in manufacture or treatment of the material would justify the use of higher values.

The point would seem to be that for each material there should be drawn up a tabulation of the kind of service it could stand. Then for a particular application it would be possible to select one of a number of materials or states of material, considering heat treatment, and the final selection would then be possible on a commercial as well as an engineering basis, taking into consideration general market conditions.

What would constitute suitability for a given use is the new problem put to the society. As it is now, each designer has a more or less broad knowledge of what is available for his needs. None the less it is conceivable that a classification of materials according to all the properties they should possess at one time or another would be of great service. For years special testing apparatus has been brought out to suit the demands of a given industry; and each well equipped buyer has been more or less a law unto himself in requiring his purchased material to pass these special tests because they are believed to be essential to his own product. Wide acceptance of the special forms of apparatus has naturally been slow; standardization of them or of their use has hardly

been possible, and it is probable in many cases that undue importance has been paid to them. The question is one that may well be considered by those close to it and by those in a position to have a wide perspective.

If the suggestion has merit, a measure of the suitability of materials of engineering will be developed sooner or later, but a conscientious effort to hasten the ascertainment of its feasibility is worth while. These columns are open to a discussion of the subject and doubtless the executive committee of the society will outline some concrete plans.

### The Dangerous Do Nothing

In the June number of the *Atlantic Monthly*, J. Salwyn Schapiro, professor of history in the College of the City of New York, has a readable article on "The Revolutionary Intellectual" in which he describes what he calls "a phenomenon new to America, the growing sympathy among men and women of education with the ideals and methods of the revolutionary proletariat." He says an intellectual class is being formed, revolutionary in tendency and bound together by a common antipathy for the present order of things. He adds that although not organized, it has coherence and it exercises power through a number of brilliantly edited journals, which, though recently estab- lished, have rapidly gained wide circulation and influence. The professor analyzes the various progressive or radical movements in the United States and foreign countries in recent years, then takes up what is commonly called "parlor Bolshevism." He says, "It would be very easy to heap ridicule on the parlor revolutionists, and laugh them out of court as sensation-hunters, dilettante dabblers in dangerous doctrines, shallow and superficial. But their numbers and influence are sufficiently important to warrant one in saying that parlor radicalism is a social phenomenon worthy of study."

But, after making these statements and others to show that the rich man of "red" tendency cannot be passed by lightly, the professor asserts that the revolutionary intellectual finds his experience with radicals fascinating just as other rich men spend their leisure and money on yachting, gambling, motoring, or other ways of obtaining thrills. Then the professor adds: "The parlor revolutionist is always safe because he *does* nothing."

We cannot agree that the parlor revolutionist is safe because he *does* nothing. That was the trouble with the pacifist and the conscientious objector in war time. They did little or nothing but complain about what other people were doing, except, of course, a few of the Debs class, who were violent in their denunciations of the Government. It is not necessary, in order to do great harm, to be violent with the tongue or otherwise. The trouble with the parlor revolutionist or radical is not that he is extreme in action, but that he uses his money to extend the most dangerous doctrines that can be spread broadcast in a republic. He is doing this to an alarming extent and it would be folly simply to try to suppress him if

anyone wished to follow that policy. The way to deal with him effectively is to answer his arguments and to improve conditions wherever he makes just criticisms.

### Steel Rail Exports and Prices

Foreign demand for American steel rails has been an outstanding feature of our export trade since the war. While the demand in 1913 was large it had expanded by nearly 50 per cent in 1919. Rail exports in 1913 were 38,800 tons per month, but in 1919 they were 54,400 tons per month, a record never approached even by Great Britain. The rate thus far in 1920, while not quite equal to that of last year, is still greatly in excess of the pre-war shipments. Canada was the largest buyer of American rails in 1913, at nearly 14,000 tons per month, but in 1919 Canadian imports had fallen to about 2000 tons per month. Japan has taken the place of Canada, the present rate of exports to Japan being over 15,000 tons per month, as against less than 1700 tons per month in 1913. France and Cuba are also large buyers of American rails and their receipts in recent months have been very heavy.

Quite in contrast is the showing for British export trade in rails. In 1913 Great Britain was the leading exporter, with average shipments abroad at 41,670 tons per month, but even then only 3000 tons per month in excess of our own. At present the British movement is only a little over 7000 tons per month, or one-sixth what it was in 1913 and about one-eighth of our current exports. The great handicap to British rail mills is their high costs. In the past year their price has advanced from £13 per ton to £23, an increase of 69 per cent. But as compared with 1914 to-day's level represents an advance of 283 per cent. American rails before the war sold at \$28 to \$30 per ton, so that the present basis of \$55 to \$57 means an increase of about 200 per cent. The British market at prevailing rates of exchange is now from \$92 to \$100 per ton, and the disparity that has long existed between British and American rail prices leaves little doubt as to the cause of the lost dominance of British rails in the export trade.

### Federated American Engineering Societies Endorsed

The plan of organization of the Federated American Engineering Societies and the American Engineering Council, adopted by the organizing conference of technical societies in Washington, June 3 and 4, was endorsed by the Engineering Council at a meeting held June 17, and its executive committee was authorized to proffer and perform such assistance as may be practicable in completing the work of establishing the American Engineering Council. Secretary Alfred D. Flinn was instructed to invite to future meetings of Engineering Council delegates of the societies participating in the organizing conference in Washington and also all those editors of technical journals who may be interested in such meetings.

The Ohio Seamless Tube Co., Shelby, Ohio, has completed a new hot mill unit which will be placed in operation July 1, and will practically double the capacity of the company's plant.

# CONTENTS

|  |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
|--|-----------|--|------------|---------------------------------------|----|-----------------------------|---|---|----|---|---|--|----|----------------------------|---|---|----|----------------------------------|----|--|----|--------------------------------------|----|------------------------------------|----|--|----|---|----|---------------------------------------|----|----------------------|----|---------------------------------------|----|--|----|--|----|-------------------------------------|------------|--|----|---------------------------------------|----|---------------------------------|----|--|----|--|----|----------------------------|----|-------------------------------------|----|--------------------------------------|----|-------------------------------------|----|----------------------|----|----------------------------|----|---|----|--|----|----------------------------------|----|---|----|--|--|--|----|--|--|--|----|--|--|
| <b>Selective Heat Treatment of Spring Steel . . . . .</b>  | <b>1</b>  |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Variations in Material—Excellent Control Afforded by This System—Experience of One Company During the War  |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Freight Rates on Iron Ore Discussed . . . . .</b>   | <b>5</b>  |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Proposal of Jones & Laughlin Steel Co. Strongly Opposed by Other Companies—Relationship Between Lake and Interior Furnaces   |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>An Old Shaft Forging of Malleable Iron . . . . .</b>  | <b>7</b>  |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Built Up From Four Bars Welded Together in Pairs—Unusual Workmanship Shown by Microscope   |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Important Labor Conference at Columbus . . . . .</b>  | <b>11</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Effort to Avert Suspension of Sheet and Tin Plate Mills—Manufacturers Opposed New Memorandum   |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>New By-Product From Coke-Oven Gas . . . . .</b>   | <b>13</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Proposed Method of Obtaining Alcohol—Foreign Experiments—Possibilities as a Motor Fuel   |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>American Society for Testing Materials . . . . .</b>  | <b>17</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Rail Steel, Molybdenum for Structural Steel, Retained Sulphur Limit and Test for Galvanized Coatings   |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Standardization of Structural Shapes . . . . .</b>  | <b>22</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Proposed Anglo-American Standard—Shapes Ordered by Weights Per Foot Only—Decimal System for Expressing Dimensions  |           |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <table> <tbody> <tr> <td>Rotary Pumps Built in France . . . . .</td> <td>4</td> <td>Standardization of Shafting . . . . .</td> <td>24</td> </tr> <tr> <td>Fluorspar in 1919 . . . . .</td> <td>4</td> <td>Shipping Board's Plan for Sales . . . . .</td> <td>24</td> </tr> <tr> <td>Coal Car Order Cuts Pig Iron Output . . . . .</td> <td>4</td> <td>Report of American Car &amp; Foundry Co. . . . .</td> <td>24</td> </tr> <tr> <td>New Radial Drill . . . . .</td> <td>8</td> <td>Safety Engineering Meeting in Chicago . . . . .</td> <td>25</td> </tr> <tr> <td>Steel Plant at Seattle . . . . .</td> <td>10</td> <td>Tests of High Speed Twist Drills . . . . .</td> <td>25</td> </tr> <tr> <td>New Canadian Consolidation . . . . .</td> <td>10</td> <td>Steel Works Cost Reports . . . . .</td> <td>27</td> </tr> <tr> <td>Arc Welded Building in England . . . . .</td> <td>12</td> <td>Operating Open-Hearth Furnaces with Coke-Oven Gas . . . . .</td> <td>27</td> </tr> <tr> <td>Factory Job-Ticket Carriers . . . . .</td> <td>12</td> <td>Editorials . . . . .</td> <td>28</td> </tr> <tr> <td>Concrete Reinforcement Bars . . . . .</td> <td>12</td> <td>Some Gains from High Prices—Criticism Without Progress—Listing Materials by Suitability—Dangerous Do-Nothing—Steel Rail Exports and Prices . . . . .</td> <td>28</td> </tr> <tr> <td>Steam Versus Electric Driven Mills . . . . .</td> <td>14</td> <td>Foreign Market Conditions . . . . .</td> <td>32, 47, 55</td> </tr> <tr> <td>Orinoco River Improvements and Venezuelan Iron Ore . . . . .</td> <td>15</td> <td>Wire Rods from Small Ingots . . . . .</td> <td>32</td> </tr> <tr> <td>Coal Operators Warned . . . . .</td> <td>15</td> <td>Titanium and Aluminum in Steel . . . . .</td> <td>33</td> </tr> <tr> <td>Hot Blast Heater for Foundry or Shop . . . . .</td> <td>16</td> <td>Steel Rail Tests . . . . .</td> <td>33</td> </tr> <tr> <td>Composition of Bar Steels . . . . .</td> <td>18</td> <td>Iron and Industrial Stocks . . . . .</td> <td>47</td> </tr> <tr> <td>Specifications for Plates . . . . .</td> <td>18</td> <td>Labor News . . . . .</td> <td>53</td> </tr> <tr> <td>Sheet High Brass . . . . .</td> <td>18</td> <td>Pittsburgh Foundrymen's Meeting . . . . .</td> <td>54</td> </tr> <tr> <td>Nomenclature of Non-ferrous Alloys . . . . .</td> <td>19</td> <td>New Trade Publications . . . . .</td> <td>65</td> </tr> <tr> <td>Definitions of Wrought Iron Terms . . . . .</td> <td>19</td> <td></td> <td></td> </tr> <tr> <td>Standardization of Nuts and Bolt Heads . . . . .</td> <td>23</td> <td></td> <td></td> </tr> <tr> <td>Standardization of Plain Limit Gages . . . . .</td> <td>24</td> <td></td> <td></td> </tr> </tbody> </table> |           | Rotary Pumps Built in France . . . . .   | 4          | Standardization of Shafting . . . . . | 24 | Fluorspar in 1919 . . . . . | 4 | Shipping Board's Plan for Sales . . . . . | 24 | Coal Car Order Cuts Pig Iron Output . . . . . | 4 | Report of American Car & Foundry Co. . . . . | 24 | New Radial Drill . . . . . | 8 | Safety Engineering Meeting in Chicago . . . . . | 25 | Steel Plant at Seattle . . . . . | 10 | Tests of High Speed Twist Drills . . . . . | 25 | New Canadian Consolidation . . . . . | 10 | Steel Works Cost Reports . . . . . | 27 | Arc Welded Building in England . . . . . | 12 | Operating Open-Hearth Furnaces with Coke-Oven Gas . . . . . | 27 | Factory Job-Ticket Carriers . . . . . | 12 | Editorials . . . . . | 28 | Concrete Reinforcement Bars . . . . . | 12 | Some Gains from High Prices—Criticism Without Progress—Listing Materials by Suitability—Dangerous Do-Nothing—Steel Rail Exports and Prices . . . . . | 28 | Steam Versus Electric Driven Mills . . . . . | 14 | Foreign Market Conditions . . . . . | 32, 47, 55 | Orinoco River Improvements and Venezuelan Iron Ore . . . . . | 15 | Wire Rods from Small Ingots . . . . . | 32 | Coal Operators Warned . . . . . | 15 | Titanium and Aluminum in Steel . . . . . | 33 | Hot Blast Heater for Foundry or Shop . . . . . | 16 | Steel Rail Tests . . . . . | 33 | Composition of Bar Steels . . . . . | 18 | Iron and Industrial Stocks . . . . . | 47 | Specifications for Plates . . . . . | 18 | Labor News . . . . . | 53 | Sheet High Brass . . . . . | 18 | Pittsburgh Foundrymen's Meeting . . . . . | 54 | Nomenclature of Non-ferrous Alloys . . . . . | 19 | New Trade Publications . . . . . | 65 | Definitions of Wrought Iron Terms . . . . . | 19 |  |  | Standardization of Nuts and Bolt Heads . . . . . | 23 |  |  | Standardization of Plain Limit Gages . . . . . | 24 |  |  |
| Rotary Pumps Built in France . . . . .   | 4         | Standardization of Shafting . . . . .  | 24         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Fluorspar in 1919 . . . . .  | 4         | Shipping Board's Plan for Sales . . . . .  | 24         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Coal Car Order Cuts Pig Iron Output . . . . .  | 4         | Report of American Car & Foundry Co. . . . .   | 24         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| New Radial Drill . . . . .   | 8         | Safety Engineering Meeting in Chicago . . . . .  | 25         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Steel Plant at Seattle . . . . .   | 10        | Tests of High Speed Twist Drills . . . . .   | 25         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| New Canadian Consolidation . . . . .   | 10        | Steel Works Cost Reports . . . . .   | 27         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Arc Welded Building in England . . . . .   | 12        | Operating Open-Hearth Furnaces with Coke-Oven Gas . . . . .  | 27         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Factory Job-Ticket Carriers . . . . .  | 12        | Editorials . . . . .   | 28         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Concrete Reinforcement Bars . . . . .  | 12        | Some Gains from High Prices—Criticism Without Progress—Listing Materials by Suitability—Dangerous Do-Nothing—Steel Rail Exports and Prices . . . . . | 28         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Steam Versus Electric Driven Mills . . . . .   | 14        | Foreign Market Conditions . . . . .  | 32, 47, 55 |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Orinoco River Improvements and Venezuelan Iron Ore . . . . .   | 15        | Wire Rods from Small Ingots . . . . .  | 32         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Coal Operators Warned . . . . .  | 15        | Titanium and Aluminum in Steel . . . . .   | 33         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Hot Blast Heater for Foundry or Shop . . . . .   | 16        | Steel Rail Tests . . . . .   | 33         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Composition of Bar Steels . . . . .  | 18        | Iron and Industrial Stocks . . . . .   | 47         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Specifications for Plates . . . . .  | 18        | Labor News . . . . .   | 53         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Sheet High Brass . . . . .   | 18        | Pittsburgh Foundrymen's Meeting . . . . .  | 54         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Nomenclature of Non-ferrous Alloys . . . . .   | 19        | New Trade Publications . . . . .   | 65         |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Definitions of Wrought Iron Terms . . . . .  | 19        |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Standardization of Nuts and Bolt Heads . . . . .   | 23        |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| Standardization of Plain Limit Gages . . . . .   | 24        |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Iron and Steel Markets . . . . .</b>  | <b>34</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Comparison of Prices . . . . .</b>  | <b>35</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Non-Ferrous Metal Markets . . . . .</b>   | <b>48</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Prices Finished Iron and Steel, f.o.b. Pittsburgh . . . . .</b>   | <b>49</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Personal Notes . . . . .</b>  | <b>50</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Obituary Notes . . . . .</b>  | <b>52</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>Machinery Markets and News of the Works . . . . .</b>   | <b>57</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |
| <b>New York Jobbers' Prices . . . . .</b>  | <b>66</b> |  |            |                                       |    |                             |   |   |    |   |   |  |    |                            |   |   |    |                                  |    |  |    |                                      |    |                                    |    |  |    |   |    |                                       |    |                      |    |                                       |    |  |    |  |    |                                     |            |  |    |                                       |    |                                 |    |  |    |  |    |                            |    |                                     |    |                                      |    |                                     |    |                      |    |                            |    |   |    |  |    |                                  |    |   |    |  |  |  |    |  |  |  |    |  |  |

## BELGIAN PRICES EASY

### Drop Regarded Artificial and of Short Duration —Wages at Liège

BRUSSELS, BELGIUM, June 10—Although production is greater, producers are still encountering some difficulty in booking orders, which is resulting in a slight drop in prices. From the suddenness of this drop it is evidently artificial and not caused by a greatly increased production. Manufacturers are well filled with orders for several months and some are accepting orders for extended delivery on odd sizes, evidently guided by the reviving market, better arrivals of fuel and improved transportation. The general disinclination to buy has caused numerous mills to offer many small sizes that they have previously refused to consider. In some districts there is evidently a desire on the part of manufacturers who are refusing to purchase at present prices to cover up their pressing need for material. There was recently the instance of a small rolling mill which filled an order for 1500 tons of rails without making it public.

The price drop is considered by many to be a condition of short duration, it being pointed out that coal has increased 3 francs per ton and labor unrest is becoming more pronounced, the most recent trouble being with the workers of the Ateliers de L'Energie, who have gone out on strike. Despite reductions that have been made in living commodities, labor is becoming more restless and numerous lock-outs are expected. The price drop has produced a wide variation in prices quoted by different mills.

In the district of Liège, workers have recently received a 10 per cent wage increase and in some rolling-mills there is agitation for a minimum wage of 26 francs for an 8-hr. day, the 1914 schedule in these mills having been a 6 to 7 francs for a 10-hr. day.

In spite of wage increases a plant near Liège re-

cently sold several thousand tons of Bessemer steel ingots at a considerable reduction in the market quotation, the price being 105 francs per 100 kg., f.o.b. mill. There is also a wide range of prices on billets and blooms, a fair average being 120 to 122 francs for billets and 105 to 110 francs for blooms.

Domestic demand for bolt iron is light, but it is somewhat offset by a heavy export demand. Export trade is now being considered favorably and there is a possibility that mills will soon turn to rolling the sizes demanded by the Levant, South Africa and the British trade. In this connection, immediately following the armistice, some exporters with an eye to future orders placed tonnage of the dimensions usually specified by these buyers, striking an average from the orders received over a period of years.

Many buyers are interested in American semi-finished material, which they believe can be obtained on earlier delivery than the domestic.

### April Iron and Steel Output

The following table shows iron, steel and zinc production for the month of April, 1920, compared with the average monthly production in 1913, all in metric tons:

|                          | April, 1920 | Per Cent of<br>Monthly Average<br>in 1913 |
|--------------------------|-------------|---|
| Pig iron . . . . .       | 75,686      | 36.6                                      |
| Finished iron . . . . .  | 15,527      | 61.2                                      |
| Steel ingots . . . . .   | 100,274     | 48.8                                      |
| Finished steel . . . . . | 80,667      | 52.1                                      |
| Crude zinc . . . . .     | 6,540       | 38.4                                      |

The Ougree-Marihaye company at Seraing, whose steel plant was greatly damaged during the invasion, has relighted a third blast furnace. The average daily production of the three furnaces is 450 tons. The company has begun the operation of two additional rolling mills.

The Esperance-Longdoz company, Seraing division, has another blast furnace in operation. Two other blast furnaces are working at reduced output owing to the irregular arrival of coke and ore.

### Interpretation of Coal Order

WASHINGTON, June 29.—In an interpretation of the recent priority orders for the movement of coal to New England, the Interstate Commerce Commission holds that the orders do not modify the established regulations governing mine ratings and distribution of cars. The commission in a letter to John Callahan, traffic manager of the National Coal Association, states that the assumption of some New England consignees that they would be able to obtain the assignment of an extra car supply to certain mines for shipment to them is incorrect. It is made clear that the order does not authorize giving preferential cars to any mine in addition to or over and above its distributive share.

### Reduced Stocks of Coal

WASHINGTON, June 29.—A canvass of stocks of coal in the hands of consumers made by the Geological Survey shows that on May 31 the stocks were considerably less than on Feb. 29. The first figures announced relate to New England, where the coal situation is more acute than in other parts of the country.

The canvass has been conducted by F. G. Tryon, of the Geological Survey, at the request of the United States Bituminous Coal Commission. As a means of getting results quickly, the inquiry was limited to a selected list of representative consumers, most of them large, including by-product coke ovens, iron and steel plants and other industrials, gas and electric utilities and retail coal dealers.

Stocks of bituminous coal held by 422 New England consumers on May 31 totaled 481,652 net tons, as against 567,831 tons on Feb. 29. The supply on hand averaged enough for five and three-seventh weeks, as against six and three-seventh weeks on the previous date.

The canvass of stocks of bituminous and anthracite coal in the hands of retail coal dealers in New

England showed a total of 174,832 tons of anthracite on May 31, as against 242,423 tons on Feb. 29, and 70,044 tons of bituminous coal on May 31, as against 96,203 tons on Feb. 29. Anthracite coal on May 31 was sufficient for a three weeks supply, as against four and two-sevenths weeks supply on Feb. 29. The supply of bituminous coal was sufficient for one and one-sevenths weeks on May 31, as against one and five-sevenths weeks on Feb. 29.

### Pere Marquette Expenditures

Frank H. Alred, president of the Pere Marquette Railroad, has authorized the immediate expenditure of \$4,602,000 of the company's recently announced improvement fund of \$21,000,000. The money will be used for the construction and improvement work as follows: \$1,750,000 for new 90-lb. rails and the laying of them; \$750,000 engine terminal at Saginaw, Mich.; \$732,000 for 12 Pacific type locomotives; \$600,000 new division yards for New Buffalo; \$320,000 for 156 miles gravel ballast; \$300,000, engine terminal at Plymouth, Mich.; \$125,000 store building at Grand Rapids, Mich.; \$25,000, new passenger station at Belding, Mich. The new rails will be laid on the Toledo-Ludington division and on the Port Huron-Grand Rapids division. This work is already under way.

### Wire Rods from Small Ingots

The first steel was melted on June 7 in a new 10-ton McLain-Carter open-hearth furnace at the plant of the Black Steel & Wire Co., Kansas City, Mo. The company will produce high grade wire and wire rope and the steel melted in the McLain-Carter furnace will be poured into 4-in., 6-in. and 8-in. ingots. It is expected that the 4-in. ingots will be rolled into wire rods with one heating and this will be a new step in wire mill practice.

## CORRESPONDENCE

## Titanium and Aluminum in Acid Open-Hearth Steel

*To the Editor:* We have seen the report of Mr. de Maré's paper, "The Acid Open-Hearth Process," in THE IRON AGE, June 3, and note that titanium is classed with aluminum in its effect on transverse tests of steel.

Aluminum does leave streaks of alumina in steel, but we have examined thousands of specimens of steel for non-metallic inclusions without finding any similar streaks in steel treated with titanium in the form of ferro-carbon-titanium. In fact, steel so treated is generally more free from inclusions of all kinds than ordinary untreated steel. We have never been able to identify any inclusion in steel as titanium oxide, although several investigations have been attempted with this end in view. On the other hand, it is quite a simple matter to identify alumina inclusions in steel.

Is it possible that Mr. de Maré's experience with titanium was derived only from the use of the so-called carbon-free alloy, which contains alumina? If so, he was putting alumina in his steel with the titanium, and naturally found streaks of inclusions in his steel, but it is doubtful if any of these were titanium oxide. We believe that if Mr. de Maré would use ferro-carbon-titanium, which is practically free from aluminum, he would find no streaks of inclusions coming from it that would spoil his transverse tests.

In all our experience with this alloy in many steel plants we have not met with any contamination of this kind, such as is common experience after using aluminum or an alloy containing appreciable amounts of

Table of Transverse Bending Tests on Basic Open-Hearth Steel Rails. Sections  $1\frac{1}{2}$  in. thick, supported at ends of flange, loaded at top of head.

|                                | Ordinary Untreated, Average of 10 Tests | Titanium Treated, Average of 10 Tests |
|--------------------------------|---|---------------------------------------|
| Breaking load, lb. per sq. in. | 39.011                                  | 45.805                                |
| Deflection, in.                | 0.183                                   | 0.328                                 |

From five different rollings. Untreated and treated sections were respectively similar. All were A rails.

Table of Transverse Tensile Tests on Marine Plate Steel. Eight heats untreated and 94 tests, from 4 to 45 per heat. Eight heats treated and 323 tests, from 7 to 122 per heat. Averages by heats:

|                                   | Ordinary Untreated | Titanium Treated |
|-----------------------------------|--------------------|------------------|
| Yield point, lb. per sq. in.      | 36,522             | 37,510           |
| Tensile strength, lb. per sq. in. | 64,848             | 64,965           |
| Elongation in 8 in., per cent.    | 25.9               | 24.2             |
| Reduction of area, per cent.      | 45.4               | 45.4             |

Table of Transverse Tensile Tests on Sheet Bars from three heats, half of each heat treated in one ladle, other half untreated in another ladle. Six tests from each ladle, from similar respective positions in ingots:

|                                   | Ordinary Untreated | Titanium Treated |
|-----------------------------------|--------------------|------------------|
| Yield point, lb. per sq. in.      | 39,050             | 37,330           |
| Tensile strength, lb. per sq. in. | 56,790             | 54,480           |
| Elongation in 8 in., per cent.    | 25.0               | 26.1             |
| Reduction of area, per cent.      | 45.0               | 53.9             |

Table of Transverse Tensile Tests on 5-in. Sq. Billets of 0.25 per cent Carbon Forging Steel, one heat half treated in one ladle, and half untreated in another ladle. Two ingots from each ladle, and three tests from similar respective positions in each ingot.

|                                   | Ordinary Untreated | Titanium Treated |
|-----------------------------------|--------------------|------------------|
| Yield point, lb. per sq. in.      | 31,650             | 30,970           |
| Tensile strength, lb. per sq. in. | 58,330             | 60,600           |
| Elongation in 2 in., per cent.    | 7.5                | 13.7             |

Table of Transverse Tensile Tests on Strip Steel, hot-rolled, two heats, half of each treated in one ladle, and half untreated in another ladle. Two ingots tested from each ladle, and three strips from similar respective positions in each ingot.

|                                   | Ordinary Untreated | Titanium Treated |
|-----------------------------------|--------------------|------------------|
| Yield point, lb. per sq. in.      | 46,780             | 46,940           |
| Tensile strength, lb. per sq. in. | 53,860             | 56,150           |
| Elongation in 4 in., per cent.    | 27.0               | 30.4             |

aluminum. Several tables of average transverse test results are given herewith which are self-explanatory, and show that in a wide range of steels the transverse test results are improved by the use of titanium in the proper form. We feel sure that Mr. de Maré's note on

titanium must be the result of trials of the aluminum-bearing alloy only, and could not have been intended to apply to titanium alone, without aluminum.

GEORGE F. COMSTOCK, Metallographist,  
Titanium Alloy Mfg. Co.

Niagara Falls, N. Y.  
June 20, 1920.

## STEEL RAIL TESTS

## Comparison of Rails From Sink Head and Ordinary Ingots

WASHINGTON, June 26.—With the co-operation of the Pennsylvania Railroad Company, the Bureau of Standards has completed an analysis of the results obtained by rolling steel rails from sinkhead ingots. The experiments were made at the Maryland steel plant at Sparrows Point, Md., now the property of the Bethlehem Steel Corporation, under the direction of Dr. George K. Burgess, chief of the division of metallurgy of the bureau; A. W. Gibbs, as chief mechanical engineer of the Pennsylvania Railroad, and F. W. Wood, then president of the Maryland Steel Co.

The investigations themselves were made in 1915, but the final study of the results has just been completed and will be issued as a document of the Bureau of Standards. Preliminary experiments in the use of sinkhead ingots led the rail committee of the Pennsylvania Railroad to purchase 100 tons of ingots cast by Sir Robert Hadfield, in England. The Hadfield ingots were used to carry out comparative tests alongside the ordinary ingots of the Maryland plant.

"All ingots were rolled in 13 passes in a two-high mill to blooms  $8 \times 8\frac{1}{2}$  in. The English-made ingots entered the blooming mill with the sinkhead toward the rolls, one-half receiving the first, or 'squaring up' pass in this direction, no draft being given on the second pass; while the other half were given no draft on the first pass, the 'squaring up' being done on pass No. 2. The Maryland ingots were tolled according to ordinary practice entering the rolls the small end first.

"In the rail mill there are six passes in the roughing rolls, four in the intermediate rolls and one finishing pass, making a total of 24 passes from ingot to finished rail.

"Each sinkhead ingot, of about 5300 lb. weight and deoxidized with aluminum in the mold, represented a separate heat of converter steel. The comparison ingots, of 7300 lb. each, were from three separate open-hearth heats, an intentional variation being made in the open-hearth and casting practice for each.

"The Hadfield type of ingot required a total discard of 18.4 per cent on the average (13 per cent top discard to eliminate piping and segregation above 12 per cent), while the average ingot of the ordinary type for rails required a total discard of 43.9 per cent (26 per cent top discard), with great variations dependent upon furnace and ingot practices. The comparison ingots of non-deoxidized rising steel, chilled on top of ingot by cast iron caps, required excessive discard to eliminate positive segregation at the top and negative segregation at the bottom of the ingot, the latter often accompanied by dangerous enclosed pipes. The second heat made of rising steel deoxidized with aluminum in the molds and the ingot tops of which were cooled with water, required the least total discard of the three heats. It was more subject to piping and less to segregation, than the first heat of ingots made in the usual manner.

"The third heat made of quiet or 'killed' steel, was not chilled on top with water or caps, and was deoxidized with aluminum in the molds. The ingots of this heat required an intermediate amount of total discard when compared to the first and second heats; this heat was the only one for which a greater top discard was required to eliminate piping than to eliminate segregation about 12 per cent. One of the ingots of third heat contained a small pipe at the bottom and all the rails from the middle and bottom of the ingots showed high negative segregation."

# Iron and Steel Markets

## MAY BE NO STRIKE

### Prospect of Sheet and Tin Plate Mill Agreement

#### Eastern Activity in Basic Iron—England Buys 150,000 Tons of Steel Scrap

After two days' conference at Columbus, Ohio, the prospects Tuesday night were that a shut-down of union sheet and tin plate mills on June 30 would be averted. Amalgamated Association officers notified the various lodges to continue at work pending further negotiations and it was expected that an agreement would be reached Wednesday.

As the independent sheet and tin plate manufacturers had taken a firm stand against the Amalgamated proposal looking to the unionizing of departments not now organized, the agreement looked for means the elimination of any such provision. There was a good prospect Tuesday night of agreeing on the sheet and tin plate mill wage scale, though not on the basis of the 20 per cent advance proposed by the workers.

The sheet and tin plate mills of the United States Steel Corporation, in which the open shop policy prevails, are not affected by the Columbus negotiations.

The week has brought the steel trade no relief from the distractions of its railroad entanglements. Works operations continue at a fairly high rate, but with further additions to the unshipped stocks of finished product.

Failure of coke supply has stopped a number of blast furnaces and in Eastern Pennsylvania six have been thrown idle on this account or for repairs and in the Chicago district two. Furnaces compelled to make a short turn for fuel have paid as high as \$18 for spot coke, though contract coke has sold at \$11. At the same time the tightening of the prompt pig iron market has put basic iron up \$1 a ton or to \$45 at Valley furnace.

The Steel Corporation has been able to ship the equivalent of its production in some lines while in others mill operations are on a larger scale than shipments. In the Chicago district its accumulation of product amounts to 130,000 tons.

The threat of a strike of Pennsylvania Railroad shopmen on July 5 adds to the seriousness of the Eastern situation and there are fresh embargoes in that section. The week's touch of warm weather has emphasized every handicap to traffic and production.

The British effort to get steel making pig iron from this side has had little result so far, though 60,000 to 80,000 tons has been the estimated need. Much less may be taken in view of the sales just put through at Philadelphia by which England secures 150,000 tons of American heavy melting steel scrap at prices ranging from \$25 to \$30, Atlantic Seaboard.

Activity of pig iron has been largely in basic. In connection with sales of 10,000 tons in the Pittsburgh district, principally to a central Ohio melter, the price was marked up \$1. Bessemer advanced

\$2 and malleable \$1 in that district and inquiries for 20,000 tons of basic are still pending. In eastern Pennsylvania, sales of basic at \$43, furnace, aggregated 15,000 tons, and there were also sales of 6000 tons of off-basic and 6000 tons of low phosphorus. In the Cincinnati market an inquiry for 10,000 tons of malleable is still pending, but 4000 tons recently inquired for will not be ordered at present. A southern Ohio company which had inquired for 10,000 tons of basic has withdrawn awaiting the result of the conference with the Amalgamated Association at Columbus. In Chicago there is an inquiry for 4000 tons of malleable and a steel company is in the market for 5000 tons of basic. New England inquiries for basic foot up about 10,000 tons. The diverting of open-top cars to the coal trade has seriously affected shipments of pig iron and has virtually stopped the movement from the Chicago district to Michigan and northern Indiana points.

Four inquiries from Western roads amount to 4750 cars, which will take 38,000 tons of plates, shapes and bars. Eighty locomotives also will be ordered by two Chicago roads. The week's buying of cars by iron and steel and coal and coke companies has brought the total of such cars placed in June to about 6000.

Cold-rolled steel is scarcer, particularly in standard rounds and the smaller sizes. Automobile companies have been picking it up and in some cases paying fancy prices.

Belgium is increasingly a competitor in South America. The Belgian comptoir lately underbid American steel makers on several thousand tons of rails for Uruguay and on a considerable lot of structural steel. Moreover, high opinion in the export steel trade favors the expectation that German steel will shortly be felt in export competition.

The Japanese situation promises to be slow in mending. In time, demand for steel products from other parts of the Orient will come to this country direct, as Japan has had a serious setback as a distributor of steel in the Far East. Meanwhile business between New York and the Orient in all metal lines is limited.

## Pittsburgh

PITTSBURGH, June 29.

The story of the iron and steel situation still is one of transportation. While it may be said that the general movement of freight is fairly good, the car supply is even worse than it has been, and this is finding reflection in a sharp falling away in shipments and in the activities of the finishing mills. Steel work operations remain at a fairly high rate, but on account of the scarcity of gondola cars this condition is accompanied by considerable additions to the already heavy accumulated stocks. The Pennsylvania Railroad is operating about 75 per cent of normal in the movement of cars, but the Baltimore & Ohio Railroad, which made the best showing of the railroads in the Pittsburgh district in the early part of the strike, is not doing at all well this week, and the Pittsburgh & Lake Erie Railroad has again slipped back. Rumors have been current that all of the train and yard crews of the Pennsylvania Railroad east of Pittsburgh would go

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At date, one week, one month, and one year previous

### For Early Delivery

| Pig Iron, Per Gross Ton: |                | June 29 | June 22 | June 1  | July 1 |
|--------------------------|----------------|---------|---------|---------|--------|
|                          |                | 1920    | 1920    | 1920    | 1919   |
| No. 2 X, Philadelphia    | <b>\$47.15</b> | \$47.15 | \$47.15 | \$29.00 |        |
| No. 2, Valley furnace    | 45.00          | 45.00   | 45.00   | 26.75   |        |
| No. 2, Southern, Cinc.   | 45.60          | 45.60   | 45.60   | 28.35   |        |
| No. 2, Birmingham, Ala.  | 42.00          | 42.00   | 42.00   | 24.75   |        |
| No. 2, furnace, Chicago* | <b>45.00</b>   | 43.00   | 43.00   | 26.75   |        |
| Basic, del'd, East, Pa.  | 44.80          | 44.80   | 44.80   | 26.00   |        |
| Basic, Valley furnace    | <b>45.00</b>   | 44.00   | 43.50   | 25.75   |        |
| Bessemer, Pittsburgh     | <b>46.40</b>   | 44.40   | 44.40   | 29.35   |        |
| Malleable, Chicago*      | 43.50          | 43.50   | 43.50   | 27.25   |        |
| Malleable, Valley        | <b>45.00</b>   | 44.00   | 44.00   | 27.25   |        |
| Gray forge, Pittsburgh   | 44.40          | 44.40   | 43.40   | 27.15   |        |
| L. S. charcoal, Chicago  | 57.50          | 57.50   | 57.50   | 38.85   |        |

| Rails, Billets, Etc., Per Gross Ton: |              | June 29 | June 22 | June 1  | July 1 |
|--------------------------------------|--------------|---------|---------|---------|--------|
| Bess. rails, heavy at mill.          | \$55.00      | \$55.00 | \$55.00 | \$45.00 |        |
| O-h. rails, heavy, at mill.          | 57.00        | 57.00   | 57.00   | 47.00   |        |
| Bess. billets, Pittsburgh            | 60.00        | 60.00   | 60.00   | 38.50   |        |
| O-h. billets, Pittsburgh             | <b>65.00</b> | 60.00   | 60.00   | 38.50   |        |
| O-h. sheet bars, P'gh.               | 75.00        | 75.00   | 80.00   | 42.00   |        |
| Forging billets, base, P'gh.         | 85.00        | 85.00   | 80.00   | 51.00   |        |
| O-h. billets, Phila.                 | 64.10        | 64.10   | 64.10   | 42.50   |        |
| Wire rods, Pittsburgh                | 75.00        | 75.00   | 75.00   | 52.00   |        |

| Finished Iron and Steel,    |             | June 29 | June 22 | June 1 | July 1 |
|-----------------------------|-------------|---------|---------|--------|--------|
| Per Lb. to Large Buyers:    | Cents       | Cents   | Cents   | Cents  | Cents  |
| Iron bars, Philadelphia     | 4.50        | 4.50    | 4.25    | 2.595  |        |
| Iron bars, Pittsburgh       | 4.25        | 4.25    | 4.25    | 2.75   |        |
| Iron bars, Chicago          | 3.75        | 3.75    | 3.75    | 2.50   |        |
| Steel bars, Pittsburgh      | 3.50        | 3.50    | 3.50    | 2.35   |        |
| Steel bars, New York        | 4.02        | 4.02    | 4.02    | 2.62   |        |
| Tank plates, Pittsburgh     | 3.50        | 3.50    | 3.75    | 2.65   |        |
| Tank plates, New York       | 3.77        | 3.77    | 4.02    | 2.92   |        |
| Beams, etc., Pittsburgh     | 3.10        | 3.10    | 3.10    | 2.45   |        |
| Beams, etc., New York       | 3.27        | 3.27    | 3.27    | 2.72   |        |
| Skelp, grooved steel, P'gh. | 2.75        | 2.75    | 2.75    | 2.45   |        |
| Skelp, sheared steel, P'gh. | 3.00        | 3.00    | 3.00    | 2.65   |        |
| Steel hoops, Pittsburgh     | <b>5.50</b> | 5.00    | 5.00    | 3.05   |        |

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

| Sheets, Nails and Wire,      |        | June 29 | June 22 | June 1 | July 1 |
|------------------------------|--------|---------|---------|--------|--------|
| Per Lb. to Large Buyers:     | Cents  | Cents   | Cents   | Cents  | Cents  |
| Sheets, black, No. 28, P'gh. | 5.50   | 5.50    | 5.50    | 4.35   |        |
| Sheet, galv., No. 28, P'gh.  | 7.00   | 7.00    | 7.00    | 5.70   |        |
| Sheets, blue, an't'd, 9 & 10 | 4.50   | 4.50    | 4.50    | 3.55   |        |
| Wire nails, Pittsburgh       | 4.00   | 4.00    | 4.00    | 3.25   |        |
| Plain wire, Pittsburgh       | 3.50   | 3.50    | 3.50    | 3.00   |        |
| Barbed wire, galv., P'gh.    | 4.45   | 4.45    | 4.45    | 4.10   |        |
| Tin plate, 100-lb. box, P'gh | \$7.00 | \$7.00  | \$7.00  | \$7.00 |        |

| Old Material, Per Gross Ton: |              | June 29 | June 22 | June 1  | July 1 |
|------------------------------|--------------|---------|---------|---------|--------|
| Carwheels, Chicago           | \$35.50      | \$35.50 | \$36.00 | \$22.50 |        |
| Carwheels, Philadelphia      | 38.00        | 38.00   | 38.00   | 23.00   |        |
| Heavy steel scrap, P'gh.     | <b>25.50</b> | 25.00   | 25.00   | 18.50   |        |
| Heavy steel scrap, Phila.    | 22.50        | 23.00   | 22.50   | 18.50   |        |
| Heavy steel scrap, Ch'go     | <b>23.50</b> | 23.00   | 22.50   | 17.50   |        |
| No. 1 cast, Pittsburgh       | <b>40.00</b> | 32.00   | 32.00   | 19.00   |        |
| No. 1 cast, Philadelphia     | 37.00        | 37.00   | 37.00   | 22.00   |        |
| No. 1 cast, Ch'go (net ton)  | <b>36.00</b> | 35.50   | 36.50   | 22.00   |        |
| No. 1 RR. wrot, Phila.       | 33.00        | 33.00   | 33.00   | 23.00   |        |
| No. 1 RR. wrot, Ch'go (net)  | <b>24.50</b> | 25.00   | 25.50   | 17.00   |        |

| Coke, Connellsville, |         | Per Net Ton at Oven: | June 29 | June 22 | June 1 | July 1 |
|----------------------|---------|----------------------|---------|---------|--------|--------|
| Furnace coke, prompt | \$17.00 | \$17.00              | \$14.00 | \$4.25  |        |        |
| Furnace coke, future | 11.50   | 11.50                | 14.00   | 4.12    |        |        |
| Foundry coke, prompt | 17.00   | 17.00                | 15.00   | 5.00    |        |        |
| Foundry coke, future | 16.00   | 16.00                | 15.00   | 5.00    |        |        |

| Metals,                    |             | Per Lb. to Large Buyers: | Cents | Cents    | Cents | Cents |
|----------------------------|-------------|--------------------------|-------|----------|-------|-------|
| Lake copper, New York      | 19.00       | 19.00                    | 19.00 | 19.25    |       |       |
| Electrolytic copper, N. Y. | 19.00       | 19.00                    | 19.00 | 19.00    |       |       |
| Zinc, St. Louis            | <b>7.55</b> | 7.45                     | 7.70  | 7.10     |       |       |
| Zinc, New York             | <b>7.90</b> | 7.80                     | 8.05  | 7.45     |       |       |
| Lead, St. Louis            | <b>8.00</b> | 7.90                     | 8.15  | 5.15     |       |       |
| Lead, New York             | <b>8.25</b> | 8.15                     | 8.50  | 5.40     |       |       |
| Tin, New York              | 48.50       | 50.00                    | 51.50 | 70.50    |       |       |
| Antimony (Asiatic), N. Y.  | 7.50        | 7.75                     | 9.00  | 8.37 1/2 |       |       |

The above prices are for domestic delivery and do not necessarily apply to export business.

out Wednesday morning, but it is now said the men have voted against a strike. Reports that the Homestead and Duquesne plants have suspended, except partially and temporarily, are denied.

An insistent demand still exists for prompt tonnages of basic pig iron, and on sales aggregating about 10,000 tons, chiefly to a central Ohio steel maker, a further advance of approximately \$1 per ton has been established. The Valley basic pig iron market now is quotable at \$45, furnace, and the same price has been established on standard Bessemer from Valley furnaces, although no individual sales of the latter have been made as large as 1000 tons. An acute shortage of all kinds of prompt pig iron exists, and the market also is strengthened by a further advance in the prices of blast furnace coke, sales of which have been made at as high as \$18 per net ton at oven.

In pursuance of their effort to help out the railroad transportation situation, several additional steel companies have entered the market for cars. The Interstate Commerce Commission has declined to extend the priority expiring June 26, giving tin plate manufacturers preference on cars for shipments to perishable food container manufacturers. A conference is being held at Columbus, Ohio, between the Amalgamated Association of Iron, Steel and Tin Workers and independent sheet and tin plate manufacturers, and hopes run strong that a suspension of operations of the union mills on Wednesday night will be averted.

**Pig Iron.**—Demand for spot tonnage of basic pig iron is still on an extremely active scale, and a fresh advance has taken place in prices. Sales aggregating at least 10,000 tons have been made, of which 5000 tons have gone to a central Ohio steel maker. Of the latter tonnage, 2000 tons was sold at \$44.75, Valley furnace basis, and 2000 tons at \$45, Valley furnace. Inquiries be-

fore makers and still to be covered are estimated at 20,000 tons. The market is not quotable at less than \$45, Valley furnace, and offerings even at that figure are exceedingly scant. The market on standard Bessemer is also well established at \$45, Valley furnace. Malleable is also quoted at \$45, Valley furnace. Several sales aggregating more than 1000 tons have been made for prompt and third quarter delivery at this figure. Merchant producers would not consider less now. Little has been done in foundry iron chiefly because available tonnages are so small. The market in this grade also appears to be at minimum of \$45, and the Westinghouse Electric & Mfg. Co. paid \$45, Valley furnace, for a sizable tonnage of malleable. Good inquiry is observed for low phosphorus pig iron with a New York State producer now quoting \$54, furnace, as compared with \$52 a short time ago. Blast furnace operations are unsatisfactory, while the order of the Interstate Commerce Commission diverting cars to the coal mines has shortened the supply of coke and increased its cost. The movement of ore is unpromising. The Carnegie Steel Co. has 39 of its 59 blast furnaces in operation. The number of active merchant stacks has not changed since a week ago, but the Ella furnace, West Middlesex, Pa., operated by E. W. Mudge & Co., will be banked to-night, owing to the fact that cars are unavailable for shipment, and it has about 10,000 tons of iron piled on the ground.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh districts being \$1.40 per gross ton:

|               |         |
|---------------|---------|
| Basic         | \$45.00 |
| Bessemer      | 45.00   |
| Gray forge    | 43.00   |
| No. 2 foundry | 45.00   |
| No. 3 foundry | 43.50   |
| Malleable     | 45.00   |

**Billets and Sheet Bars.**—The independent market in sheet bars still reflects a rather soft undertone, due to the fact the possibility still exists of a suspension of plants operating under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers to-morrow night, while the fact that shipments of sheets and tin plate again are decreasing, as a result of the recent order of the Interstate Commerce Commission with regard to open top railroad cars, also makes for conservatism in the matter of purchases. While independent makers here and in the Valley continue to ask \$75 for open-hearth sheet bars, this price appears to be both a maximum and also somewhat extreme. News has leaked out of a sale of 10,000 tons of open-hearth sheet bars by a steel company to the General Motors Corporation. This is a conversion purchase and it is understood that the price was in the neighborhood of \$70, the transaction including a round tonnage of billets to the same buyer at \$65, the sheet bars taking a comparatively low figure because of the rather full price paid for the billets. It has been arranged to have the sheet bars converted by the American Sheet & Tin Plate Co., but this will be entirely at the convenience of the latter. Steel works operations in this district hold at between 80 to 90 per cent of capacity, but production is even further in excess of shipments this week than last, due to the shortage of cars.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$38 to \$65; 2 x 2-in. billets, \$42 to \$65; Bessemer sheet bars, \$42 to \$65; open-hearth sheet bars, \$42 to \$75, and forging billets, ordinary carbons, \$85 to \$90 base, all f.o.b. Youngstown or Pittsburgh mill.

**Ferroalloys.**—Little or no change has taken place in the local situation in ferromanganese. Prompt tonnages still are rated at from \$225 to \$250, delivered, for 76 to 80 per cent domestic material, but demands are neither numerous nor large and it is extremely doubtful whether more than the lower figure could be obtained on lots of a carload or more. All domestic makers now are quoting last half material at \$200, delivered, one maker who recently quoted \$190 against such deliveries having withdrawn that price. Last half English ferromanganese is being offered at \$190, c.i.f. Atlantic seaboard, and there is more confidence in the ability of the English producers to ship against contracts now than there was a short time ago. Not only are consignments reaching this side of the water, but it is reported that English makers have a chance to secure a big tonnage of Russian manganese ore in exchange for foodstuffs, the details of which now are under negotiation. The market in spiegeleisen of average 20 per cent content is nominal at \$70 to \$75, furnace. The latter figure finds no basis in sales in this market, although it is understood to have been paid elsewhere. The Midvale Steel & Ordnance Co. is seeking 3000 tons of this material for last half shipment. Pressure to sell is light because makers are well committed against current production and want to see how much tonnage they will have to carry over into the last half before further obligating themselves. The market remains dull and weak on 50 per cent ferrosilicon, which is not quotable on sales in this market at higher than \$80, furnace, freight allowed, and probably can be had for less. Fair inquiry is noted for silveries, with the Westinghouse Electric & Mfg. Co. in the market for 1000 tons of 8 to 9 per cent material for last half shipment. Electrolytic ferrosilicon is being offered in pig form at \$65, furnace, or about \$68 delivered Pittsburgh, for 12 to 15 per cent.

We quote 76 to 80 per cent domestic ferromanganese \$200 for last half and \$225 to \$250 for prompt delivery, with a reduction of \$1.50 to \$1.75 per unit for lower percentages. We quote 50 per cent ferrosilicon at \$80 to \$85 and 18 to 22 per cent spiegeleisen at \$70 to \$75, furnace. Prices on Bessemer ferrosilicon are: 9 per cent, \$60.50; 10 per cent, \$63.50; 11 per cent, \$66.80; 12 per cent, \$70.10. We quote 6 per cent silver iron, \$53; 7 per cent, \$54.50; 8 per cent, \$56.50; 9 per cent, \$58.50, and 10 per cent, \$61. An advance of \$3.30 per gross ton is charged for each 1 per cent silicon for 11 per cent and over on Bessemer ferrosilicon, and an advance of \$2.50 per gross ton is charged for each 1 per cent silicon for 11 per cent and over on silvery iron. All the above prices are f.o.b. makers' furnace, Jackson or New Straitsville, Ohio, which has a uniform freight rate of \$2.90 per gross ton for delivery in the Pittsburgh district.

**Structural Material.**—Structural lettings and inquiries continue to shrink as a result of the uncertainty of deliveries created by the railroad transportation

situation and the fact that the banks are prone to frown upon building loans at the moment. It is doubtful whether the fabricating interests have gone through a quieter period since the signing of the armistice than they have experienced in the past two or three weeks. Lettings placed here in all cases have involved only small tonnages. The Jones & Laughlin Steel Co. has taken 250 tons for a garage for the Atlantic Land Co., Pittsburgh, and 100 tons for apartment houses for the Standard Steel Car Co., Butler, Pa. The American Bridge Co. has taken 275 tons for a bridge for the Louisville & Nashville Railroad at Biloxi Bay, La.; 175 tons for a bridge for the Otis Steel Co., Cleveland, and 175 tons for a boiler house for the American Steel & Wire Co. at Cleveland. The McClintic-Marshall Co. reports 250 tons for a dirigible shed at Lakehurst, N.J., for the Government, 150 for the Stanton Street pier shed, New York, and 150 tons from the Pittsburgh Railways Co. for a bridge over the Monongahela River at Rankin, Pa. All shops in this district are busy, but shipments almost are nil owing to the car shortage. Plain material prices continue soft under narrowing demands. None of the independent companies now is getting more than 3.50c. on plates and some would consider less, while independent prices on structural shapes range from 3.10c. to 3.50c., and only one of the independents is holding structural bars as high as 4c.

**Plates.**—The demand remains limited in this market and about the only promising source of early business seems to be the railroad equipment manufacturers, who are in receipt of a number of inquiries and orders for cars from industrial companies. The Carnegie Steel Co. already has a large order with the Standard Steel Car Co. and is reported to be in the market for 500 50-ton cars, while the Republic Iron & Steel Co. has placed 160 70-ton hopper cars with the Pressed Steel Car Co. The Donner Steel Co., Buffalo, has increased its inquiry to 400 cars, while the American Steel & Wire Co. is inquiring for 250, and the H. C. Frick Coke Co. for 1000 cars. The independent market on plates now is not over 3.50c. base, and it is doubtful if 3.25c. would be declined on attractive tonnages.

We quote sheared plates of tank quality, 1/4-in. and heavier, at 2.65c. to 3c. for very indefinite delivery, while prices on 1/4-in. and heavier plates named by mills that will agree to ship out in three to four months, is 3.50c.

**Tin Plate.**—Preferential treatment granted manufacturers in the matter of car supplies for the shipment of material for perishable food containers by the Interstate Commerce Commission expired yesterday, and although an effort was made to have the priority renewed, a hearing held in Washington yesterday brought out that the accumulation of stocks was reduced from 2,500,000 boxes to 800,000 boxes. Because of this development, the Interstate Commerce Commission believed that the perishable food can manufacturers had been well cared for and consequently declined to extend the priority. The commission, however, decided to continue to give car preference to the can companies for movement of tin cans. Not much change is noted in the tin plate situation other than that as a result of the sharp reduction in warehouse stocks, plant operations are on a considerably heavier scale than they have been recently. Several of the independent companies are running full, and the industry as a whole is averaging close to 70 per cent of capacity. Although this is normally the quiet season in tin plate, a good many demands are coming out, and business is restricted only because of lack of supplies.

We now quote tin plate to domestic consumers for remainder of the year delivery at \$7 to \$8.50 base box, stock items \$9, and for export \$11 to \$12 per base box, all f.o.b. Pittsburgh.

**Steel Rails.**—Railroads are beginning to come into the market for the purpose of locating sources of supplies on rails for 1921, and it is believed that actual orders for next year are not far off. While the corporation subsidiaries rolling standard sections all hold to \$45 and \$47 respectively for Bessemer and open hearth, it is doubtful if they will accept any more tonnage at these prices than they have for the current year. Indeed, it might be said unofficially that these

companies will gage their books for 1921 by the 1920 tonnage. Independent makers all are quoting well above corporation levels, the Cambria Steel Co. quotation being at \$60 for Bessemer and \$62 for open-hearth rails. Movement of rails from the Edgar Thomson works, Carnegie Steel Co., is fairly free, as the railroads are placing cars in order to insure delivery. The situation in light rails is slightly easier in that the makers who previously were indifferent about orders now express willingness to take on some tonnage.

The Carnegie Steel Co. is still quoting the March 21, 1919, prices, these being 2.45c. for 25 to 45-lb. sections, 2.49 1/4c. for 16-lb. and 20-lb. sections, 2.54c. for 12-lb. and 14-lb. sections, and 2.58 1/2c. for 8-lb. and 10-lb. sections. This company is also quoting standard sections 50 lb. and heavier at \$45 for Bessemer and \$47 for open hearth stock. The Cambria Steel Co. is quoting 25-lb. to 45-lb. sections at 3.75c., 16-lb. and 20-lb. sections, 3.79 1/2c. 12-lb., 3.84c. at mill, for such delivery as it can make.

**Wire Rods.**—The demand from both domestic and foreign sources continues active, but actual business is much restricted by the lack of supplies. Independent mills continue to quote common soft rods at \$75 and \$80, screwstock rods at \$80 and \$85 and high carbon rods at \$85 to \$100.

**Wire Products.**—Shortage of cars is seriously affecting the movement of wire and wire nails from local plants, and deliveries for the most part are confined to nearby points which can be reached by motor truck. Some buyers have secured supplies by providing the cars for shipment. The demand for both wire and wire nails is still extremely heavy and cannot be satisfied because of the sold-up condition of the makers. Two makers here last week declined approximately 7000 tons of business each because of their congested order books. Export demands are as active as those from domestic sources and carry extremely fancy prices. Although the season for wire fence is over, those producing wire for this purpose report no cancellations, but on the contrary secondary manufacturers are specifying full. Prices on wire products are quoted on page 49.

We quote wire nails at \$3.25 base, this being the price of the American Steel & Wire Co., and \$4 base on the new card recently issued by four or five of the independent mills. We quote bright basic wire at \$3, this being the price of the American Steel & Wire Co., and \$3.50, this being the price of most of the independent mills.

**Cotton Ties.**—While the Pittsburgh Steel Co. has made no formal opening of its books, it has taken some business in cotton ties from some of its regular customers at a price somewhat in excess of the quotation of the Carnegie Steel Co. of \$2 per bundle of 45 lb. Late advices from the South suggest a material improvement in the cotton crop prospects since a month ago, and it is now estimated that the production will be about 11,500,000 bales as against less than 10,000,000 bales, the minimum estimate of a month ago.

**Hoops and Bands.**—Makers are so heavily committed as to be indifferent about new business, especially in view of the fact that supplies of steel are so hard to obtain on account of the car shortage, and it is declared that no trouble will be experienced in making good-sized sales at 5.50c. base. It is asserted that even more has been paid against prompt tonnages. The Carnegie Steel Co. still is quoting 3.05c. for unspecified delivery.

**Iron and Steel Bars.**—Leading makers of iron bars still are holding to 4 1/4c. for common iron, but are predicting higher prices shortly on account of the recent wage increase granted at the conference of the Amalgamated Association of Iron, Steel and Tin Workers and the Western Bar Iron Association. Demands are somewhat less urgent than they have been, but makers have several weeks' business in sight. Some paucity marks the demand for merchant steel bars, and while the Cambria Steel Co. still holds the 4c. base, the more general independent market is from 3c. to 3 1/4c. A large demand remains unsatisfied, but buyers, being covered by contracts, are not pressing as urgently for delivery. Merchant bar mill operations in this district at best are intermittent, due to the slow delivery of steel. More or less tonnage is being removed from the

Duquesne works of the Carnegie Steel Co. by motor truck.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. to 3.50c. at mill, prices depending entirely on the buyer and the delivery wanted. The demand for concrete reinforcing steel bars is fairly active, and we quote these, when rolled from billets, at 4c. to 4.25c., and from old steel rails at about 3.50c. at mill. We quote common iron bars at 4.25c. to 4.50c. and refined iron bars at 4.50c. to 5c. in carloads, f.o.b. mill, Pittsburgh.

**Nuts, Bolts and Rivets.**—Makers in this district are seriously hampered through inability to secure supplies of bars, rods and drawn wire. Operations, consequently, are irregular and generally low. Some makers have not yet followed the advance recently announced by the Pittsburgh Screw & Bolt Co. and one other maker here. Prices and discounts are given on page 49.

**Sheets.**—Although sheet mill operations are maintained at a comparatively high rate, much production is being piled, due to the acute shortage of cars. The American Sheet & Tin Plate Co. has no less than 32,000 tons piled up awaiting shipment, and the position of the independents in this respect is little, if any, better. The market has a quiet appearance, not that the demands are any less urgent or numerous, but because makers are well committed over the remainder of the year and are not eager for fresh obligations. In the case of the mills operating under the agreement of the Amalgamated Association of Iron, Steel and Tin Workers, the disposition to decline business is rather marked, pending the result of the conference being held at Columbus, Ohio, on the wage scale question. This conference is expected to result in a settlement, as it is believed that since the ending of the Atlantic City conference there has been considerable modification of the ideas on both sides. Illustrative of the great scarcity of cars, it might be stated that on Monday the Vandergrift Works of the American Sheet & Tin Plate Co. did not have a car.

We quote No. 28 gage box annealed one-pass black sheets at 4.35c. to 6.50c.; No. 28 galvanized, 5.70c. to 8.50c., and Nos. 9 and 10 blue annealed at 3.55c. to 6c., the lower prices named being the March 21 schedules, which are still named by the leading interests, while the higher prices represent a fair range of quotations by the independent mills.

**Cold-Finished Steel Bars.**—Makers note no material relaxation in the demand, although it is admitted that buyers are not pressing so urgently for shipment as they were some time ago. Two of the non-integrated manufacturers in this district are fairly well off in the matter of supplies of hot-rolled bars, and are having a fair degree of success in shipment. The leading makers are quoting from 4c. to 4.25c., base, but no specific deliveries are guaranteed at these figures. Makers in a position to take on prompt tonnages are quoting as much as 10c., which has been paid.

**Cold-Rolled Strips.**—The demand still is described as good, although possibly not quite so urgent as it was recently. Shipments, except by motor truck, are light, due to the car shortage, and more production is being piled than is leaving the mills. The regular base price still is 8 1/2c. per lb., mill, but sales carrying prices as high as 10c. still are reported.

**Hot-Rolled Strip Steel.**—Talk of an early advance to 6c., base, is beginning to be heard of, although important makers still are taking business at 5 1/2c. per lb., mill. This latter price, however, is the minimum and where definite delivery is guaranteed, prices range from 6c. to 7c. at mill.

**Spikes.**—Small spikes for coal mines are in active demand here and it has been the recent experience of makers that standard spikes are in better request than they were a short time ago. Current bookings of leading makers are sufficient to keep them busy for the next 90 days.

We quote standard spikes, 1/2 to 9/16 in. and larger, \$4 base per 100 lb. in carload lots of 200 kegs of 200 lb. each, and small spikes, 3/8 in. and 7/16 in., \$4.50; 5/16 in., \$5.00; boat and barge spikes, \$4.25 f.o.b. Pittsburgh. Tie plates, \$3 to \$4 per 100 lb.

(Continued on page 46)

## Chicago

CHICAGO, June 29.

Owing to the failure of the telegraph company to transmit part of last week's market report, the current letter will include some of the facts omitted on June 22.

The announcement of the Railroad Labor Board that it will issue a wage award not later than July 20 has put a stop to strike talk in this district, at least for the time being. On the assumption that the award will not be made until the twentieth, 1000 general chairmen of the four railroad brotherhoods will convene in this city at that time to pass judgment on the findings of the board. While the danger of a strike has been removed, other transportation difficulties have appeared. The restriction of the use of gondola cars to loading in the direction of the mines will prove a hardship on iron and steel producers and consumers, as well as scrap dealers. In the Chicago switching district, an order has been issued requiring that special permits be obtained for all shipments except those originating and terminating on the initial line. This action was taken to relieve the belt lines which have large accumulations of freight which connecting roads have failed to accept.

Pig iron and steel production, though laboring under difficulties, is still fairly good. The leading interest has been forced to bank two blast furnaces since two weeks ago, making a total of 19 active stacks out of 29. Through a liberal use of scrap in the open hearths, however, it has been able to maintain operations at over 75 per cent of ingot capacity. Owing to the corporation's great difficulty in securing cars for the shipment of finished material, over 130,000 tons is now piled in its yards. The foremost independent is also operating on a 75 per cent basis, but is experiencing unceasing trouble in securing adequate supplies of coking coal. Low volatile coking coal for spot shipment has recently brought as high as \$9 a ton at mines. Illinois and Indiana steam coal is also hard to obtain, and in some cases mills have paid \$8 and \$9 a ton at mines for prompt shipments.

Mild steel bars, sheets, wire products and bolts and nuts are the most active commodities in the market. Three new freight car inquiries will account for about 32,000 tons of plates, shapes and bars. On the whole, the demand for plates and structural shapes is not urgent, and quotations by independent mills have receded from 4c., Pittsburgh, to a range from 3c. to 3.75c. The leading interest continues to add to the commitments in plates and shapes, but without promising delivery, as operating conditions make it likely that present bookings will employ its capacity beyond the close of the year. Although there has been a decline in new orders in the case of this producer, the total of new commitments and current specifications in its various products is considerably in excess of output. Pig iron has revived somewhat as the result of two large inquiries for basic and malleable. Scrap is also more active, two steel interests having purchased a total of about 15,000 tons of heavy melting steel.

**Pig Iron.**—Outside of a few good-sized inquiries and orders, the market remains rather quiet. A local manufacturer of machinery is in the market for 4000 tons of malleable and a large steel foundry interest wants 5000 tons of basic. Over 1000 tons of Canadian foundry was recently sold in this district at the equivalent of about \$50, base, Chicago. Other features of the market are an inquiry for 400 tons of silvery and a sale of 200 tons of Southern foundry for delivery over the last half. There continues to be a fair amount of spot business. Spot Virginia foundry is bringing \$44 base, furnace, Southern foundry \$42 base, Birmingham, and Northern No. 2 foundry, \$45 local furnace. Malleable and basic, when obtainable from the Valleys, are bringing \$45 and \$44, furnace, respectively, while furnaces in this district are asking \$43.50 and \$43 respectively. An automobile manufacturer is offering a resale lot of silvery at considerably below the furnace quotations. Foundry coke is scarce and high. Beehive coke is commanding \$17, Connellsville, for prompt shipment,

while local by-product foundry is quoted at \$15.50, ovens. The by-products company is making every effort to take care of the needs of melters in this district, but transportation conditions and a shortage of coal have prevented it from increasing its output materially. Molders' helpers who were on strike in local jobbing foundries have returned to work without achieving their demands.

The following quotations are for iron delivered, at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 50c. per ton.

|  |                  |
|--|------------------|
| Lake Superior charcoal, averaging sil.                                 |                  |
| 1.50 (other grades subject to usual differentials), deliv. at Chicago. | \$57.50          |
| Northern coke, No. 1, sil. 2.25 to 2.75, last half                     | 45.25            |
| Northern coke, No. 1, spot   | 47.25            |
| Northern coke foundry, No. 2, sil. 1.75 to 2.25 last half              | 43.00            |
| Northern coke, No. 2, spot   | 45.00            |
| Northern high phos. foundry, last half                                 | 43.00            |
| Southern coke No. 1 foundry and No. 1 soft sil. 2.75 to 3.25           | 50.20            |
| Southern coke No. 2 foundry sil. 2.25 to 2.75                          | 48.70            |
| Southern foundry sil. 1.75 to 2.25                                     | 47.00            |
| Malleable not over 2.25 sil  | 43.50            |
| Basic  | 43.00            |
| Low phos. (copper free)  | 54.00            |
| Silvery, 7 per cent  | \$56.40 to 59.80 |

**Ferroalloys.**—The market is inactive but occasional sales of ferromanganese for spot delivery are being made at \$235 to \$250, delivered, while the quotations on third quarter and last half shipment respectively are \$225 and \$200.

We quote 75 to 80 per cent ferromanganese, last half, delivered, \$200; third quarter, \$225; spot, \$235 to \$250; spot, delivered, \$235; 50 per cent ferrosilicon at \$85 delivered; spiegeleisen, 18 to 22 per cent, \$70 to \$75 furnace.

**Railroad Rolling Stock.**—In addition to the business mentioned in the plate paragraph, the following orders and inquiries are to be noted. The Chicago & Northwestern is in the market for 500 stock cars, 250 refrigerator cars and 70 locomotives. The Chicago, St. Paul, Minneapolis & Omaha is inquiring for 10 locomotives.

**Plates.**—The demand for plates is not so urgent as in the early months of the year and the price of 4c. Pittsburgh, which was quite general on business taken by independents, seems to be a thing of the past. Omitting the Steel Corporation, the present range is all the way from 3 1/4c. to 3 3/4c. with an intermediate price of 3 1/2c. more commonly heard of. Three confidential inquiries constitute the most important development in railroad car business, one calling for 1000 box cars, another for 1000 automobile cars and a third for 2000 general service cars. Altogether these cars will require about 32,000 tons of plates, shapes and bars. The Illinois Central has awarded 200 flat cars to the Bettendorf Co., and another line is in the market for 100 flat cars. The leading independent is still able to take on business for delivery late in the year and, while the foremost interest continues to accept new orders, it is making no promises of delivery before 1921.

The mill quotation is 2.65c. to 3.75c. Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 4.17c. for plates out of stock.

**Structural Material.**—While building work is decidedly slack, there are more lettings and inquiries to report than has been the case for several weeks. The decline in construction activity has been reflected in a slowing up in the demand for structural shapes, but even in this commodity the leading interest is unable to promise delivery this year. It is unlikely that independents are booking much tonnage at 4c., Pittsburgh, and, while the dearth of business makes it difficult to ascertain new price levels, it is said that quotations have been made ranging from 3c. to 3 1/2c. Structural lettings include:

Logan Bridge over Canadian River, Quay County, New Mexico, 362 tons, to unknown fabricator.

High school, Bay City, Mich., 250 tons, to unnamed fabricator.

Consolidated Water Power & Paper Co., machine and finishing rooms, Grand Rapids, Wis., 212 tons, to unnamed fabricator.

Mark Mfg. Co., furnace building, Zanesville, Ohio, 200 tons, to McClintic-Marshall Co.

Herschel Mfg. Co., foundry building, Peoria, Ill., 173 tons, to A. Lucas & Sons.

Los Angeles and Salt Lake Railroad, machine shop, Provo, Utah, 152 tons, to Omaha Steel Works.

Strand Theater Building, Lansing, Mich., 117 tons, to Federal Bridge Co.

Current inquiries include:

Superstructure, Madison Street Bascule Bridge, Chicago, 1300 tons.

Highway bridges, Tybee project, near Savannah, Ga., 1100 tons.

Union Pacific Railroad, draw bridge, St. Joseph River, 264 tons.

Buildings, Diocese College, Sioux Falls, S. D., 230 tons. Crane runway, Truscon Steel Co., Chicago, 216 tons.

The mill quotation is 2.45c. to 3.50c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 3.97c. for materials out of warehouse.

**Bars.**—Neither the leading interest nor the foremost independent can take new business for delivery this year. The former is still adding to its present commitments in connection with car construction work in which bars are complementary to plates and shapes, but is not promising delivery during 1920. The demand for mild steel bars is heavy and comes from many sources, such as washing machine manufacturers, jobbers, tractor and wheel plants, etc. Inquiry is strongest for the small sizes, for which, it is said, the country's capacity would fall short even in the absence of industrial and transportation difficulties. Independents are experiencing no difficulty in closing business at 4c., Pittsburgh. A Buffalo mill is offering four to ten weeks' delivery at that price. Bar iron is less active, but at that new specifications and orders are about equal to shipments. Rail carbon steel bars are slow, partially because the agricultural implement industry has entered its between season period and partly because reinforced concrete construction has fallen off.

Mill prices are: Mild steel bars, 2.35c. to 4c.; Pittsburgh, taking a freight of 27c. per 100 lb.; common bar iron, 3.75c. to 4c., Chicago; rail carbon, 3.75c., mill.

Jobbers quote 3.87c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.80c. for rounds and 6.30c. for flats and squares, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. for orders up to 1000 lb.

**Sheets.**—There has been a spurt in the demand for sheets in this district of late with a recurrence of the tendency toward high premiums above the Steel Corporation prices. Hot weather continues to interfere with production and a failure of some mills to reach an agreement with the Amalgamated Association may mean partial or complete suspension of operation by those plants on July 1.

**Wire Products.**—The demand for wire nails, barbed wire and plain wire is exceptionally strong and apparently all shipments from mills are rapidly going into consumption, with the result that jobbers are unable to accumulate stocks. The hesitancy of buyers to pay high premiums has disappeared, at least in the case of nails, for which inquiry is particularly insistent. Car supply is less satisfactory and threatens to become even more of a problem as the result of the recently announced restrictions on the use of gondola cars. Operation has suffered in the plants of the leading interest, although not so much in the Chicago district mills as in those farther east. The mills in this territory are now producing at about 80 per cent of capacity. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 49.

Mill quotations are 4.35c. to 6.50c. for No. 28 black; 3.55c. to 6c. for No. 10 blue annealed, and 5.70c. to 8.50c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight of 27c. per 100 lb. to Chicago. The lowest prices are those of March 21.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 7.02c.; No. 28 black, 8c.; No. 28 galvanized, 9.50c.

**Cast Iron Pipe.**—Detroit has awarded 3000 tons to the Lynchburg Foundry Co. and 4000 tons to the American Cast Iron Pipe Co. The market is slow, but prices are firm.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$79.80; 6-in. and above, \$76.80; class A and gas pipe, \$2 extra.

**Rails and Track Supplies.**—Although western lines are anxious to place their rail requirements for next year, the leading interest is unwilling to close business so far ahead. It is still accepting new orders in light rails and track supplies, however, but is making no

promises as to delivery. Inquiry for tie plates, spikes and bolts is large, while the demand for light rails from both domestic and foreign sources is exceptionally heavy. Since the first of the month, new commitments in light rails have exceeded production by a considerable margin.

Standard Bessemer rails, \$45 to \$55; open hearth rails, \$47 to \$57. Light rails, 2.45c. to 3.50c. f.o.b. makers' mills.

Standard railroad spikes, 3.55c. to 4c., Pittsburgh. Track bolts with square nuts, 4.90c. to 5c., Pittsburgh. Steel tie plates and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3.75c. f.o.b. makers' mills.

**Bolts and Nuts.**—The demand is exceptionally heavy and manufacturers are closing contracts for third quarter and in the case of a few consumers for six months. Most makers are quoting the new prices, but one large interest is still holding to its former quotations. Jobbers have advanced carriage bolts and tapped nuts. For mill prices, see finished iron and steel, f.o.b., Pittsburgh, page 49.

Jobbers quote structural rivets, 5.62c.; boiler rivets, 5.72c.; machine bolts up to  $\frac{1}{2}$  x 4 in., 20 per cent off; larger sizes, 10 off; carriage bolts up to  $\frac{1}{2}$  x 6 in., 10 off; larger sizes, 5 off; hot pressed nuts, square tapped and hexagon tapped, list price; coach or lag screws, gimlet points, square heads, 30 per cent off. Quantity extras are unchanged.

**Old Material.**—The market is slowly gaining in strength and activity. A steel interest has bought 5000 tons of heavy melting at \$23.50 and \$24 per gross ton, while a lot of 500 tons of rerolling rails brought as high as \$35 per gross ton. Mills are running short of rails and further shipments of that commodity as well as other forms of scrap may be seriously interfered with by the new regulations requiring that gondola cars be loaded in the direction of the coal mines only. Despite the prospect of difficulty on this account, some dealers anticipate higher prices and are covering accordingly. Railroad lists include the Burlington, 3,500 tons; Pennsylvania Railroad, Northwest System, 1200 tons relaying rail and 400 tons of rail joint.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

|                                       | Per Gross Ton      |
|---------------------------------------|--------------------|
| Iron rails                            | \$34.00 to \$35.00 |
| Relaying rails                        | 50.00 to 55.00     |
| Car wheels                            | 35.50 to 36.00     |
| Steel rails, rerolling                | 33.50 to 34.00     |
| Steel rails, less than 3 ft.          | 26.00 to 26.50     |
| Heavy melting steel                   | 23.50 to 24.00     |
| Frogs, switches and guards, cut apart | 23.50 to 24.00     |
| Shoveling steel                       | 23.00 to 23.50     |
| Low phos. heavy melting steel         | 28.00 to 28.50     |
| Drop forge flashings                  | 20.00 to 20.50     |

|  | Per Net Ton |
|--|-------------|
|--|-------------|

|                             |                    |
|-----------------------------|--------------------|
| Iron angles and splice bars | \$31.00 to \$31.50 |
| Steel angle bars            | 23.00 to 23.50     |
| Iron arch bars and transoms | 32.00 to 32.50     |
| Iron car axles              | 40.50 to 41.00     |
| Steel car axles             | 33.50 to 34.00     |
| No. 1 busheling             | 18.50 to 19.00     |
| No. 2 busheling             | 12.50 to 13.00     |
| Cut forge                   | 22.50 to 23.00     |
| Pipes and flues             | 15.50 to 16.00     |
| No. 1 railroad wrought      | 24.50 to 25.00     |
| No. 2 railroad wrought      | 22.50 to 23.00     |
| Steel knuckles and couplers | 23.50 to 24.00     |
| Coil springs                | 24.50 to 25.00     |
| No. 1 cast                  | 36.00 to 37.00     |
| Boiler punchings            | 24.50 to 25.00     |
| Locomotive tires, smooth    | 22.50 to 23.00     |
| Machine shop turnings       | 9.00 to 9.50       |
| Cast borings                | 12.00 to 12.50     |
| Stove plate                 | 27.50 to 28.00     |
| Grate bars                  | 27.50 to 28.00     |
| Brake shoes                 | 24.00 to 24.50     |
| Railroad malleable          | 26.00 to 26.50     |
| Agricultural malleable      | 25.00 to 25.50     |
| Country mixed               | 15.50 to 16.50     |

A petition in bankruptcy has been filed against H. W. Cotton, Inc., Woolworth Building, New York, manufacturer of automatic and precision machinery with plant at the Bush Terminal, Brooklyn. It is said that the liabilities are about \$200,000, and assets \$100,000, subject to a mortgage of about \$53,000 on the plant. Jesse Watson has been appointed receiver by Judge Mayer, United States District Court.

Kern Dodge, Philadelphia, has been appointed receiver for the Hero Mfg. Co., manufacturer of motor truck axles, with plant at Twenty-third and Westmoreland streets, that city. The company, it is stated in the equity suit filed, has nominal assets of \$450,000 and liabilities not exceeding \$265,000. Due to abnormal money conditions, the company states that it has not sufficient cash on hand to meet maturing obligations.

## Boston

BOSTON, June 29.

**Pig Iron.**—The market is more active, approximately 18,000 tons being reported sold the past week on deliveries extending from immediate to the last quarter. About half the iron sold was southern, silicon 2.25 to 2.75 and higher, to Massachusetts and Connecticut consumers, at \$42 furnace base. Southern silicon 2.25 to 2.75, via water, will cost \$49.45 f.o.b. Boston, and silicon 3.25 to 3.75, \$52.85. To these prices must be added unloading charges and the extra local freight. Southern silicon 2.25 to 2.75, all rail, sold on a delivered base of \$51, and silicon 3.25 to 3.75 of \$55.10. A Massachusetts melter is in the market for 800 tons southern silicon 4.25 to 4.75 last half delivery. A barge of southern high silicon, 1200 tons, is due at Bridgeport, Conn., July 5; a barge, 1350 tons, at Providence, R. I., about July 15; and a steamer, 3000 tons, at Providence about July 15. Several hundred tons Virginia sold on a \$45 furnace base, but 500 tons silicon 2.25 to 2.75, last half, sold at \$44 furnace base, and 500 tons, silicon 2.75 to 3.25, third quarter, at same base, to Connecticut consumers, as well as many smaller lots. Other sales include 500 tons eastern Pennsylvania, silicon 2.25 to 2.75, third quarter, at \$48.25 furnace or \$51.15 delivered Massachusetts; a like amount of Buffalo resale silicon 3.25 to 3.75, third quarter, at \$50 furnace or \$53.90 delivered. Pennsylvania iron is reported as offered for 1921 first quarter at prices under the market, but the report cannot be substantiated. One eastern Pennsylvania furnace is asking \$46 furnace base for third quarter and \$47 last quarter. A small lot of Richmond special analysis sold at \$70 furnace base. Several melters are in the market for low silicon malleable. During the past fortnight, one Buffalo furnace has shipped 6000 tons booked at \$28 to \$31 per ton to New England. Delivery is doubtful owing to embargoes placed on all roads but the Grand Trunk. Permits are scarce, owing to the recent ruling of the Interstate Commerce Commission. Delivered prices follow:

|   |                    |
|---|--------------------|
| East. Penn., sil. 2.25 to 2.75.....         | \$49.15 to \$51.15 |
| East. Penn., sil. 1.75 to 2.25.....         | 47.90 to 49.90     |
| Cent. & West. Penn., sil. 2.25 to 2.75..... | 49.95 to 50.95     |
| Cent. & West. Penn., sil. 1.75 to 2.25..... | 48.70 to 49.70     |
| Buffalo, sil. 2.25 to 2.75.....             | 49.15 to 50.15     |
| Buffalo, sil. 1.75 to 2.25.....             | 47.90 to 48.90     |
| Virginia, sil. 2.25 to 2.75.....            | 49.95 to 50.95     |
| Virginia, sil. 1.75 to 2.25.....            | 48.70 to 49.70     |
| *Alabama, sil. 2.25 to 2.75.....            | 49.45              |
| *Alabama, sil. 1.75 to 2.25.....            | 47.75              |

\*Alongside Boston prices.

**Finished Iron and Steel.**—The Cambria Steel Co. succeeded in getting a solid train of steel through just before the embargoes were placed on New England all-rail shipments. Since then very little iron and steel has filtered through from the mills. Prices all down the line are unchanged. The demand for bars is less pronounced. Fabricators are figuring on 750 tons structural steel for the Boston Elevated Railway Co., Forest Hills elevated yard extension; 500 tons for the Massachusetts Bonding & Insurance Co. building in Back Bay; 100 tons for the Jones Mill, New Bedford; and about 100 tons for the Saco-Lowell Works, Newton Upper Falls, Mass., crane runway. The New England structural Co. is awarded about 100 tons for the New England Oil Refinery Corporation, Fall River, Mass., plant. Local warehouse and jobbing prices on iron and steel are strong but unchanged. Cut nails have been advanced 25c. per cask in a jobbing way.

Jobbers quote: Soft steel bars, \$5.50 to \$6.50 per 100 lb. base; flats, \$6.50 to \$6.85; concrete bars, \$6 to \$6.50; tire steel, \$7 to \$7.50; spring steel, open hearth, \$11; crucible, \$16; steel bands, \$8 to \$8.25; steel hoops, \$9; toe calk steel, \$8; cold-rolled steel, \$10 to \$10.50; structural, \$6 to \$6.50; plates, \$6.50; No. 10 blue annealed sheets, \$9; No. 28 black sheets, \$9.15; No. 28 galvanized, \$10.50; refined iron, \$5.50 to \$8; best refined, \$7 to \$7.50; Wayne, \$8.50; band iron, \$8; hoop iron, \$9; Norway iron, \$20.

**Limestone.**—Some foundry owners are running short of supplies, but the best deliveries that can be had from either Rockland, Me., or Stockbridge, Mass., are 60 days. The market on limestone is \$2 per ton, f.o.b. shipping point.

**Old Material.**—Borings and turnings are stronger on buying for Pennsylvania rolling mills. Buying of heavy melting steel for export at \$19.50 to \$20.50, f.o.b.

shipping point, or about \$21 dock, Boston, continues on a moderate scale. Otherwise the old material market is dull and uninteresting because of transportation conditions. The Interstate Commerce Commission's ruling that pig iron and old material cannot be shipped in open top cars has resulted in fewer shipping permits. Cast iron can be shipped in box cars and forge fire scrap, except to Coatesville, where cars are unloaded by magnet cranes. A few consumers will accept borings and turnings in box cars, but most of them will not. Prices as quoted at the local yards follow:

|  |                    |
|--|--------------------|
| No. 1 heavy melting steel.....                         | \$18.00 to \$21.00 |
| No. 1 railroad wrought.....                            | 24.00 to 25.00     |
| No. 1 yard wrought.....                                | 22.00 to 23.00     |
| Wrought pipe (1 in. in diameter, over 2 ft. long)..... | 18.00 to 19.00     |
| Machine shop turnings.....                             | 13.50 to 14.50     |
| Cast iron borings.....                                 | 16.00 to 16.50     |
| Heavy axle turnings.....                               | 16.00 to 16.50     |
| Blast furnace borings and turnings.....                | 13.50 to 14.00     |
| Forged scrap.....                                      | 13.00 to 13.50     |
| Bundled skeleton.....                                  | 13.00 to 13.50     |
| Street car axles.....                                  | 31.00 to 32.00     |
| Car wheels.....  | 37.00 to 38.00     |
| Machinery cast.....                                    | 38.00 to 39.00     |
| No. 2 cast.....  | 34.00 to 35.00     |
| Stove plate.....                                       | 24.00 to 25.00     |
| Railroad malleable.....                                | 26.00 to 27.00     |
| Rerolling rails.....                                   | 27.00 to 28.00     |

## Buffalo

BUFFALO, June 29.

**Pig Iron.**—Lack of cars is threatening the entire fabric of the industry in this district. The conditions have been bad enough for the past two months, but the ruling of the Interstate Commerce Commission, sending all open equipment into the coal trade, makes the situation infinitely worse, and of such gravity that already Buffalo district furnaces are preparing to shut down. Unless some modification of the order can be obtained, furnaces will not only have to reduce blast, but draw fires completely. Only a slight portion of the iron produced has been moved for the past six weeks, but the new order means that, not only will the iron produced be not moved, but the incoming shipments of coke will be cut off, compelling furnaces to go out of operation. Shutdown of furnaces would work inestimable hardship, inasmuch as some foundries served by this district's furnaces use as high as 1000 tons a day and are in such a position that they must receive these supplies regularly at this time. One furnace during the week sold over 1000 tons of foundry at \$45. Another interest sold 500 tons of foundry for fourth quarter delivery at the same base price. A third furnace sold some small foundry tonnages. About the only inquiry to feature the market was one for 3000 tons of malleable.

We quote f.o.b. Buffalo:

|  |                  |
|--|------------------|
| No. 1 foundry, 2.75 to 3.25 sil.....   | \$48.00          |
| No. 2 X foundry, 2.25 to 2.75 sil..... | 46.25            |
| No. 2 plain, 1.75 to 2.25 sil.....     | 45.00            |
| Basic.....                             | \$44.00 to 45.00 |
| Malleable.....                         | 46.25            |
| Lake Superior charcoal.....            | 58.00 to 60.00   |

**Coke.**—Car shortage is responsible for low sales. There is a brisk demand, and \$18 Connellsville is being paid for best foundry coke, but the sales are entirely contingent on transportation.

**Finished Iron and Steel.**—Mills look back on the last two weeks as perhaps the worst in point of car shortage of any since the last switchmen's strike. Supplies of rolling stock reached the low ebb, and the amount of material moved was very small. This week the ruling of the Interstate Commerce Commission restricting the use of gondola cars to exclusively coal shipments is having a very harsh effect on shipments. The Buffalo Chamber of Commerce, supported by all mill interests in the district, is attempting to secure some modification of the original drastic order. There is not a mill in the district that is not piling some material. During the past few days, mills have obtained almost enough cars to move the day's rolling each 24 hours, but insufficient to attack piles. Mills are accepting some tonnages of stropes and plates, but the market is not so strong as it has been. Structural business is slow, and is apparently being held up by high costs. One mill reports that it has plenty of

light plates on its books, but could accept ship plate tonnage. Another mill is taking ship plate tonnage at delivery from three to six weeks. Bar, tinplate and pipe demand is strong; mills are being faced now by shortage of incoming shipments. One mill interest states that if incoming shipments do not improve it will be necessary to shut down. Just now all mills are running close to maximum. The contract for an additional building for the American Car & Foundry Co., Buffalo, for a blacksmith and machine shop has been placed with the John W. Cowper Co., and will require about 250 tons of structural steel, which has been placed with the Kellogg Structural Steel Co., Buffalo.

Jobbers quote the following prices for this territory: Steel bars, 4.61c.; iron bars, 5.26c.; structural, 4.46c.; plates, 4.66c.; No. 10 blue annealed sheets, 6.51c.; No. 28 black sheets, 8.25c.; No. 28 galvanized sheets, 9.50c.; bands, 5.81c.; hoops, 6.06c.; cold rolled steel, 6.00c.

**Old Material.**—The ruling of the Interstate Commerce Commission placing all open equipment exclusively in the coal trade is having a very injurious effect on the shipment of old material. Unless cars are routed towards mines there is no possibility left of employing them in anything but coal shipments. In view of the large tonnage of heavy melting steel recently purchased by a Buffalo mill, and the fact that dealers all over the district are bending every effort to fill this tonnage, the Pittsburgh market, which was doing more or less purchasing here, has been cut off, and no cars are now being routed to Pennsylvania points, so that the privilege of shipping scrap in open equipment to mining regions, is not much of a concession. The tonnage mentioned above is now said to have amounted to about 20,000 tons and upwards, and along with this steel, the Buffalo purchaser bought probably 5000 tons of hydraulic compressed at \$23 to \$23.50. The price paid for the steel was \$26. Shipment over the balance of the year will be accepted on this order. About the highest recent price paid for steel up till this big purchase was \$24, a figure paid by another Buffalo mill which had been steadily buying.

|                                     |                       |
|-------------------------------------|-----------------------|
| Heavy melting steel, regular grades | .. \$25.00 to \$26.00 |
| Hydraulic compressed                | 23.00 to 23.50        |
| Low phos. 0.04 and under            | 31.50 to 32.50        |
| No. 1 railroad wrought              | 30.50 to 31.50        |
| No. 1 machinery cast                | 37.50 to 38.50        |
| Iron axles                          | 39.00                 |
| Steel axles                         | 39.00                 |
| Car wheels                          | 37.00 to 38.00        |
| Railroad malleable                  | 30.50 to 31.50        |
| Machine-shop turnings               | 15.00 to 16.00        |
| Heavy axle turnings                 | 19.50 to 20.50        |
| Clean cast borings                  | 16.50 to 17.50        |
| Iron rail                           | 29.50 to 30.50        |
| Locomotive grate bars               | 23.50 to 24.50        |
| Stove plate                         | 31.50 to 32.50        |
| Wrought pipe                        | 20.50 to 21.50        |
| No. 1 busheling                     | 19.50 to 20.50        |
| Bundled sheet stamping              | 16.50 to 17.50        |

## Birmingham

BIRMINGHAM, ALA., June 29.

**Pig Iron.**—Another quiet week in the Birmingham pig iron market. Very few sales were reported. One concern booked 1500 tons for southern delivery and a number of small lots for the Middle West. No large business was done by any concern. The matter of delivery has become acute. Two interests have been unable to move more than a half of the output. None has moved its entire production. The result is an additional accumulation on the yards of probably 40,000 tons. The Gulf States Steel Co. resumed at its basic furnace at Gadsden after repairs taking two months. The entire output is used by the producing company. The coal car priority order disturbed furnace operators very much when first issued, but toward the close of the week it had not appeared certain that any furnace would be forced to bank on account of failure to secure raw material. An interest like the Woodward Iron Co. is safe because it assembles raw material with its own cars and motive power with a short radius on its own property. Furnaces in northern Alabama are threatened by non-delivery of sufficient ore and, in some cases, coke also. However, the week passed without anything serious occurring and with all hoping for a modification of the order. The coal car priority order, of course, affected movements of pig iron from furnaces to other industries and there was considerable menace

in that direction to pipe shops and other large consumers of pig iron. High representatives of the iron and steel interests of Alabama appeared before the Interstate Commerce Commission during the week protesting against the more than 100 per cent increase in raw material rates in Alabama made during the war. The market is firm at \$42 and the export inquiry remains strong with little inclination to take on more for export out of consideration for the domestic trade.

We quote per gross ton, f.o.b. Birmingham district furnaces, the Tennessee company excepted, as follows:

|                            |               |
|----------------------------|---------------|
| Foundry, sil. 1.75 to 2.25 | ..... \$42.00 |
| Basic                      | ..... 41.00   |
| Charcoal                   | ..... 55.00   |

**Cast Iron Pipe.**—Gastonia, N. C., has ordered 200 tons of 16-in. pipe and will order 800 tons more. The United States Cast Iron Pipe & Foundry Co. reports satisfactory delivery of 7000 tons taken to San Francisco and Los Angeles for California distribution by steamship out of Mobile via Panama Canal. There was no breakage. The Birmingham plant of the United States company shut down on June 26 until after July 4 on account of car shortage that affected both delivery of heaped up yard stocks and reception of pig iron from furnaces. Other pipe shop shutdowns were threatened. Sanitary shops are still operating on full turn, but this pace will probably be reduced at an early date unless the lull in structural activity disappears. Prices remain at \$73 for 4-in. pipe and \$70 for 6-in. and upward.

**Coal and Coke.**—Strikes at 10 merchant mines affect domestic coal production seriously and prices are higher. The strikes are for union recognition in arbitration exclusively. None of the large iron and steel manufacturers has been attacked. Furnace coke has sold at \$10 and \$11 for spot delivery and un-picked foundry has sold at \$12 for spot. Hand-picked spot foundry makes sell regularly at \$13 and up.

**Old Material.**—The scrap market has been in a state of almost complete stagnation except on contract deliveries. At least \$1 under quotations is all that steel buyers will offer. Scrap dealers were also threatened at the close of the week by a car famine incident to the coal priority order, and joined slag, sand and other industrial operators in a petition to the Interstate Commerce Commission to modify the order.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

|                       |                          |
|-----------------------|--------------------------|
| Steel rails           | ..... \$21.00 to \$22.00 |
| No. 1 steel           | ..... 19.00 to 20.00     |
| Cast iron borings     | ..... 14.00 to 15.00     |
| Machine-shop turnings | ..... 14.00 to 15.00     |
| No. 1 cast            | ..... 34.00 to 35.00     |
| Car wheels            | ..... 32.00 to 33.00     |
| Tramcar wheels        | ..... 31.00 to 32.00     |
| Steel axles           | ..... 29.00 to 30.00     |
| No. 1 wrought         | ..... 26.00 to 27.00     |

## St. Louis

ST. LOUIS, June 26.

**Pig Iron.**—The week has developed no changes of moment in the general aspect of this market. No notable orders or inquiries came forth, and trading was confined chiefly to minor lots for prompt delivery, the largest heard of being for 500 tons to a melter in the northern end of the territory. Deliveries are coming along in better shape than heretofore, and considerably less complaint is heard on this score. Dealers report some requests to expedite shipments, and about an equal number to hold back. Birmingham furnaces have not changed their quotation of \$42 for 1.75 to 2.25 per cent silicon, but one interest at Chattanooga has withdrawn its \$42 price, and is now asking \$43. Plenty of iron, however, can be had at the lower figure. Consumption is progressing as extensively as the supply of coke will permit, and the various plants are able to ship out finished materials more easily than at any time since the outlaw switchmen's strike was inaugurated. Steel makers seem to have covered on their immediate wants, and no new inquiries are out for basic. A leading East Side interest is reported to have engaged 1000 tons of spiegeleisen and 500 tons of ferromanganese this month, for delivery during the third quarter.

**Coke.**—Conditions of scarcity, verging in some in-

stances on famine, continue throughout this region. Prices are extravagantly high, and from the looks of things they will go higher before there is any recession. The crux of the situation is freight cars, which grow increasingly scarce as time passes. Ovens normally supplying this district report that it is impossible to secure equipment for handling their output, and they have been obliged to curtail operations. Some few cars come through the jam from time to time, and these are at a premium. Melters with urgent orders to execute are offering fancy figures for single cars. Connellsburg 72-hr. coke is quoted here at \$16, but few sales are being made. To the west things are even worse, and more smelters are closing down or cutting their outputs.

**Finished Iron and Steel.**—The demand for all standard articles shows no signs of abating, and warehouses are well behind on orders. The leading warehouse interest has had goods on the way from Eastern and Northern plants for weeks, and has been exerting every influence to speed up deliveries, but with scant success. Local mills report greater efficiency in deliveries, and in a measure are beginning to catch up on their most pressing orders. Building materials are particularly popular, and there is an insatiable demand from the Southwestern oil fields for tubular goods. Railroads are buying in small quantities to effect urgent repairs to track and rolling stock. Prices hold steady, with a tendency to rise.

For stock out of warehouse we quote as follows: Soft steel bars, 3.94c.; iron bars, 4.50c.; structural material, 4.04c.; tank plates, 4.24c.; No. 10 blue annealed sheets, 7.09c.; No. 28 black sheets, cold rolled, one pass, 8.10c.; No. 28 galvanized sheets, black sheet gage, 9.60c.

**Old Material.**—The chief item of news in the week was a meeting on June 24 of scrap dealers for the purpose of seeking a change in the Government regulation, Order No. 7, prohibiting the use of open top equipment for loading anything but fuel. The consensus of the meeting was that a continuance for more than 30 days of this rule would result in the closing of every scrap yard and mill in the district. A memorial was framed and sent to the Interstate Commerce Commission asking that 30 days be the duration of the regulation, and that it be modified so as to permit loading out of cars arriving which are going to points between here and the loading points of coal. Trading in old material has been in light volume all week, and there was no change in prices on dealers' lists.

We quote dealers' prices f.o.b. customers' works, St. Louis industrial district, as follows:

| Per Gross Ton  |                    |  |
|--|--------------------|--|
| Old iron rails   | \$31.50 to \$32.00 |  |
| Old steel rails, rerolling                               | 30.00 to 30.50     |  |
| Old steel rails, less than 3 ft.                         | 24.00 to 24.50     |  |
| Relaying rails, standard sections, subject to inspection | 50.00 to 55.00     |  |
| Old car wheels   | 34.50 to 35.00     |  |
| No. 1 railroad heavy melting steel                       | 22.50 to 23.00     |  |
| Heavy shoveling steel                                    | 21.00 to 21.50     |  |
| Ordinary shoveling steel                                 | 20.50 to 21.00     |  |
| Frogs, switches and guards, cut apart                    | 22.50 to 23.00     |  |
| Ordinary bundled sheets                                  | 13.00 to 13.50     |  |
| Per Net Ton  |                    |  |
| Heavy axle and tire turnings                             | 14.00 to 14.50     |  |
| Iron angle bars  | 27.00 to 27.50     |  |
| Steel angle bars   | 21.00 to 21.50     |  |
| Iron car axles   | 39.00 to 39.50     |  |
| Steel car axles  | 32.50 to 33.00     |  |
| Wrought arch bars and transoms                           | 31.00 to 31.50     |  |
| No. 1 railroad wrought                                   | 25.00 to 25.50     |  |
| No. 2 railroad wrought                                   | 23.00 to 23.50     |  |
| Railroad springs   | 21.50 to 22.00     |  |
| Steel couplers and knuckles                              | 21.00 to 21.50     |  |
| Locomotive tires, 42 in. and over, smooth inside         | 20.00 to 20.50     |  |
| No. 1 dealers' forge                                     | 20.00 to 20.50     |  |
| Cast iron borings  | 13.00 to 13.50     |  |
| No. 1 busheling  | 19.00 to 19.50     |  |
| No. 1 boiler, cut to sheets and rings                    | 15.00 to 15.50     |  |
| No. 1 railroad cast                                      | 34.00 to 34.50     |  |
| Stove plate and light cast                               | 26.00 to 26.50     |  |
| Railroad malleable                                       | 24.00 to 24.50     |  |
| Agricultural malleable                                   | 23.00 to 23.50     |  |
| Pipes and flues  | 16.50 to 17.00     |  |
| Heavy railroad sheet and tank                            | 15.00 to 15.50     |  |
| Railroad grate bars                                      | 26.00 to 26.50     |  |
| Machine-shop turnings                                    | 11.50 to 12.00     |  |
| Country mixed  | 17.50 to 18.00     |  |
| Uncut railroad mixed                                     | 18.00 to 18.50     |  |
| Horseshoes   | 24.50 to 25.00     |  |

#### New Pipe Shops

BIRMINGHAM, ALA., June 29.—The Iron City Pipe & Fittings Co., a co-operative merchants' sanitary pipe works, commenced operations on June 22. The Birmingham Pipe & Fittings Co. will commence operations during the week.

#### New York

New York, June 29.

**Pig Iron.**—Inquiry for foundry iron is in small volume, but about 12,000 tons of basic iron is being inquired for, of which 7000 tons is for a stamping company and 5000 tons for a wire company for third quarter and last half delivery respectively. The railroad situation continues very bad, especially as to delivery of coke and a number of furnaces, including one Warwick, one Pulaski, two Donner, one Birdsboro and one Temple, are either blown out or expecting to blow out this week on account of inability to get coke. As high as \$18 for furnace coke and \$19 for foundry coke has been paid for immediate delivery by plants which were in imminent danger of being compelled to cease operations. Considerable inquiry for both foundry and steel making irons for export is still pending, but not much attention is being paid to it.

We quote for delivery in New York as follows:

|   |                    |
|---|--------------------|
| East. Pa., No. 1 fdy., sil. 2.75 to 3.25  | \$50.05 to \$51.05 |
| East. Pa., No. 2X fdy., sil. 2.25 to 2.75 | 49.05 to 50.05     |
| East. Pa., No. 2 fdy., sil. 1.75 to 2.25  | 47.80 to 48.80     |
| Buffalo, sil. 1.75 to 2.25                | 47.90 to 48.90     |
| No. 2 X Virginia, sil. 2.25 to 2.75       | 49.60              |

**Ferroalloys.**—Demand for ferromanganese continues to be extremely light. It is understood that a sale of 185 tons for delivery in the last half to a domestic consumer was consummated at \$190, but it is the impression that special considerations prevailed which accounts for a price of \$10 below the regular market. American producers are firm in their quotation of \$200, delivered, for last half, and there is also a fair amount of British alloy available for shipment from August on at \$195, seaboard. For spot delivery the prevailing quotation seems to be \$225, delivered. The spiegelisen market is more active. There are numerous domestic inquiries for small lots which aggregate 1000 tons, mostly for delivery in the third quarter, and there is also an inquiry for 4000 tons for foreign shipment. The quotation is firm at \$75, furnace. There seems to be no life to the 50 per cent ferrosilicon market and sales of only small lots are noted at \$80 to \$85 per ton delivered.

**Finished Iron and Steel.**—While some Eastern mills continue anxious for orders for plates and shapes, the situation as regards other products, particularly bars, sheets and wire products, has not changed. If mills were able to take the business in the latter lines for reasonable delivery, there would be many consumers anxious to buy. There is relatively little plate business, except for export. British shipbuilders continue to inquire for ship plates and there have been numerous sales of lots of a few hundred tons each. In some instances 3.75c., Pittsburgh, has been gotten, which is higher than prices on much of the domestic business. Plates seem to be in fairly easy supply at 3.50c., base, Pittsburgh, from independent mills, though one or two sellers still adhere to 4c. Shapes are to be had at 3.25c., Pittsburgh, and possibly could be bought for less on desirable specifications. The structural steel market is quiet, but there are many large buildings talked of, including an addition to the Commodore Hotel, New York, and a new hotel on the site of the Murray Hill Hotel, New York. The Hudson Coal Co. has let a coal breaker at Scranton, Pa., 1300 tons, to an independent fabricator; the Phoenix Bridge Co. has been awarded 1600 tons for the Frankford elevated railroad, Philadelphia; the Virginia Bridge & Iron Works has taken 1100 tons for a silk mill at Hopewell, Va., the McHarg-Barton Co., New York, has let about 2500 tons to an independent fabricator for two city piers at Stapleton, Staten Island. The City of New York is in the market for 300 tons for a pier shed at Twentieth Street and the East River. It is expected that new bids will be asked for the proposed court house in New York. The Vreeland Motor Co., Irvington, N. J., has postponed construction of its plant, for which 300 tons of steel was wanted. Inquiries pending include 1500 tons for a Federal Reserve Bank storage building, Maiden Lane, New York, and 200 tons for an addition to the Hearn department store, Fourteenth Street, New York. Industrial companies continue to place orders for railroad cars in an effort to overcome the transportation difficulties. The

Carnegie Steel Co. has placed 500' hopper car bodies with the Standard Steel Car Co.; the Rainey-Wood Coke Co., Philadelphia, has placed 500 70-ton coke cars with the Cambria Steel Co., and the Pressed Steel Car Co. has taken the following orders: 140 hopper cars and 50 gondolas for the Whitaker-Glessner Co., Wheeling, W. Va.; 250 from the American Steel & Wire Co.; 160 from the Republic Iron & Steel Co.; 60 55-ton hopper cars from the Struthers Furnace Co., Cleveland; 25 50-ton hopper cars from the Aluminum Co. of America; 150 55-ton hopper cars from the W. H. Warner Co., Pittsburgh; 40 65-ton hopper cars from M. A. Hanna & Co., Cleveland. The Louisville & Nashville Railroad has ordered 100 55-ton hopper cars from the Pressed Steel Car Co.

We quote for mill shipment, New York, as follows: Soft steel bars, 2.62c. to 4.52c.; shapes, 2.72c. to 4.27c.; plates, 2.92c. to 4.27c., the minimum prices being for indefinite delivery and the highest prices for delivery in a few weeks; bar iron, flats, wider than 6 in., 4.57c.;  $\frac{3}{8}$  and 7/16 in., round and square, 5.27c.; light rounds, squares and flats, 5.77c., and other sizes, 4.27c.

**Warehouse Business.**—The freight congestion is forcing some consumers to call for material at the mills with their own trucks. Most warehouses note a slackening in inquiries although local demand still continues good. Prices remain firm and some shipments of sheets are being received, which are immediately taken by customers. Warehouses are looking forward, however, to a cessation of deliveries of sheets, many believing that mills will close down for several weeks. A large independent warehouse has increased its prices on bands 1 $\frac{1}{2}$  to 6 by 3-16 to No. 8 from 5.82c per lb. to 6.32c per lb. This is the tenth week of the strike in the brass and copper mills. Prices are on page 64.

**High Speed Steel.**—Buying is light. Producers still quote \$1.25 to \$1.30 per lb., New York, for 18 per cent tungsten.

**Cast-Iron Pipe.**—The market remains unchanged. We quote 6-in. and heavier at \$76.30, New York; 4-in., \$79.30, with \$2 additional for Class A and gas pipe.

**Old Material.**—Many factors continue to depress the scrap market and prices have again fallen from 50c to \$1 on several grades. The ruling that open-top cars are to be used for coal only will make difficult the shipment of scrap. Several eastern Pennsylvania consumers, which are usually active, are either not inquiring at all or are asking for the withholding of shipments on old orders. Some heavy melting steel continues to be sold for the Pittsburgh district or for export, both of which bring higher prices, though the quality has to be of the best. However, because of the risks, few will attempt export. Many horseshoes are being sent to Italy in burlap bags. The steadiest demand is for borings and turnings for blast furnaces.

|  |                    |
|--|--------------------|
| Buying prices per gross ton, New York, follow:               |                    |
| Heavy melting steel  | \$19.50 to \$20.00 |
| Rerolling rails  | 29.00 to 30.00     |
| Relaying rails, nominal                                      | 52.00 to 54.00     |
| Steel car axles  | 39.00 to 40.00     |
| Iron car axles   | 42.00 to 43.00     |
| No. 1 railroad wrought                                       | 29.00 to 30.00     |
| Wrought iron track   | 22.00 to 22.50     |
| Forge fire   | 13.50 to 14.00     |
| No. 1 yard wrought, long                                     | 23.50 to 24.00     |
| Light iron   | 9.00 to 10.00      |
| Cast borings (clean)   | 16.50 to 17.00     |
| Machine-shop turnings  | 14.00 to 14.50     |
| Mixed borings and turnings                                   | 14.00 to 14.50     |
| Iron and steel pipe (1 in. min. diam., not under 2 ft. long) | 18.00 to 18.50     |
| Stove plate  | 24.00 to 24.50     |
| Locomotive grate bars  | 26.00 to 27.00     |
| Malleable cast (railroad)                                    | 28.00 to 29.00     |
| Old car wheels   | 36.00 to 37.00     |

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

|   |                    |
|---|--------------------|
| No. 1 machinery cast  | \$38.00 to \$39.00 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size | 37.00 to 38.00     |
| No. 1 heavy cast, not cupola size                                 | 30.00 to 31.00     |
| No. 2 cast (radiators, cast boilers, etc.)                        | 31.00 to 32.00     |

The Penn Seaboard Steel Corporation has placed in operation a new blooming mill at New Castle, Del. It has a capacity of 20,000 tons of billets, blooms and slabs per month.

## Cincinnati

CINCINNATI, June 29.

**Pig Iron.**—The recent activity was not maintained during the week, and dullness again characterized the market. Very few inquiries are being received and these only for small tonnages for prompt shipment. An inquiry for 10,000 tons of malleable and 1500 tons of foundry, from the International Harvester Co. for its Springfield plant, is still pending, while it is understood that the Indiana manufacturer who inquired for 4000 tons of malleable has decided not to purchase at the present time. A central Ohio implement manufacturer has withdrawn his inquiry for 1000 tons of high silicon malleable. An inquiry from a Kentucky melter for 2000 tons of foundry for first half of next year has been received, but it is understood that furnaces are unwilling to quote that far ahead. A leading seller of Southern iron reports sales during the week of 4000 tons, half of which went into the Chicago district. Several small lots of the iron offered by Henry Ford for resale were disposed of in this territory. This iron went at \$44, furnaces, for silicon 1.75 to 2.25, no distinction being made as to the district from which the iron comes. It is understood that about 15,000 tons of this iron will be offered for sale. Other sales noted include one of 400 tons of Southern iron to a local melter at \$42, base, Birmingham, and 500 tons of Valley iron to an Ohio melter at \$45. A central Ohio foundry took 350 tons of Southern iron, silicon 2.25 to 2.75, at \$43.25, Birmingham. It is understood that the southern Ohio steel plant which recently inquired for 10,000 tons of basic has decided to postpone its purchase until the wage question has been settled with its sheet mill employees. The Interstate Commerce Commission's ruling regarding the use of open top cars for coal purposes only will have a serious effect on the shipment of pig iron, and one southern Ohio interest has notified its customers that deliveries on contracts will necessarily be delayed.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote f.o.b. Cincinnati:

|   |                  |
|---|------------------|
| Southern coke, sil. 1.75 to 2.25 (base price) | \$45.60          |
| Southern coke, sil. 2.25 to 2.75 (No. 2 soft) | 46.85            |
| Ohio silvery, 8 per cent sil.                 | 59.80            |
| Southern Ohio coke, sil. 1.75 to 2.25 (No. 2) | 46.80            |
| Basic Northern                                | 41.80            |
| Malleable                                     | \$45.80 to 46.80 |

**Finished Material.**—Local warehouses report the demand for small bars and cold-rolled steel as heavy, and with stocks in their present shape, coupled with poor deliveries from mills, they are unable to take care of their regular customers. One jobber reports that he has had for some weeks 45 carloads of steel in transit, and can get no information as to when it will be delivered. There have been several inquiries during the week from automobile manufacturers for automobile body sheets, but with the present congested condition of the order books of mills in this territory, it is not expected that the orders will be placed here. One selling agency reports that if the sheets were available the manufacturers would have no objection to paying 12c. per lb. Prices, with the exception of plates and shapes, are firm. Local warehouses are now quoting structural shapes at 4.50c., and plates,  $\frac{1}{4}$  in. and heavier, at 4.50c. This is a reduction of slightly over  $\frac{1}{2}$ c. in shapes, and a straight  $\frac{1}{2}$ c. in plates. The structural market is quiet, as prospective building operations are being held up for various reasons, chief of which appears to be the tight money situation. The Big Four Railroad has taken bids on 375 tons of steel for bridge work, and this will likely be awarded during the week. Some difficulty is being experienced in placing orders for concrete reinforcing bars, one mill in the Pittsburgh district quoting on nothing under 1 in. The Newport Rolling Mills on Friday night closed down their hot mills pending an adjustment of wage scales with their employees. Other mills in this district have not as yet made any definite plans as to what they will do should an agreement not be reached before July 1, but are

taking a cheerful view of the situation, and hopes are expressed that a shutdown will be avoided.

Jobbers quote: Iron and steel bars, 5c. to 6c.; structural shapes, 4.50c.; plates, 4.50c.; steel bands, 6.50c.; No. 10 blue-annealed, 7.50c.; No. 28 black sheets, 9c. to 10c.; No. 28 galvanized sheets, 10c. to 11c.

**Tool Steel.**—The market remains quiet, with prices firm at \$1.25 for high-speed steel. The machinists' strike is cutting down the production in some of the metal-working plants, and for this reason companies are not inclined to buy as freely as they have been doing in the past.

**Coke.**—Sales of 500 tons of Connellsville foundry coke at \$18, ovens, to a nearby foundry for immediate delivery, was a feature of the coke market during the week. This is the highest price so far reported, though \$17.50 appears to be the market for spot coke. A blast furnace in this territory contracted for 12,000 tons of Connellsville furnace coke, shipment to be at the rate of 2000 tons per month, for the next six months, at \$11 ovens. The usual quotation for last half contracts, however, is \$14.50, with very little offering. Sellers report that very little coke is available in the Wise County field, and none at all in the New River district. Indiana operators are unable to take care of their regular customers, and many inquiries are being received from Chicago and the Northwest. An operator in this district has notified his customers that, owing to the difficulty of securing coal, he will be unable to ship foundry coke on contracts.

**Old Material.**—The local scrap market remains quiet, though higher prices are offered by dealers for relaying and rerolling rails. On the other hand, bittings, turnings, pipes and flues, railroad tank and sheet are softer, and prices have been reduced about 50c. The movement of scrap will be badly handicapped by the Interstate Commerce Commission's ruling that open top cars must be used only for coal carrying purposes, and dealers do not look for any activity until transportation conditions become more settled.

*Per Gross Ton*

|                               |                    |
|-------------------------------|--------------------|
| Bundled sheets                | \$15.00 to \$16.00 |
| Old iron rails                | 27.00 to 28.00     |
| Relaying rails, 50 lb. and up | 50.00 to 51.00     |
| Rerolling steel rails         | 31.00 to 32.00     |
| Heavy melting steel           | 21.50 to 22.50     |
| Steel rails for melting       | 24.00 to 25.00     |
| Car wheels                    | 29.00 to 30.00     |

*Per Net Ton*

|                                  |                    |
|----------------------------------|--------------------|
| No. 1 railroad wrought           | \$25.00 to \$26.00 |
| Cast borings                     | 11.50 to 12.00     |
| Steel turnings                   | 9.50 to 10.00      |
| Railroad cast                    | 31.00 to 32.00     |
| No. 1 machinery                  | 35.00 to 36.00     |
| Burnt scrap                      | 22.00 to 23.00     |
| Iron axles                       | 29.50 to 30.00     |
| Locomotive tires (smooth inside) | 23.50 to 24.50     |
| Pipes and flues                  | 16.00 to 16.50     |
| Malleable cast                   | 22.00 to 22.50     |
| Railroad tank and sheet          | 16.00 to 16.50     |

## Cleveland

CLEVELAND, June 29.

**Iron Ore.**—Several independent furnaces have sent telegrams to the Interstate Commerce Commission during the past few days urging favorable action on the petition filed several weeks ago by several ore firms asking that shipments be prorated to consuming interests according to their requirements. It is understood that the commission now has the subject under investigation and consideration, and a decision is expected shortly. The car supply for ore shipments as a whole shows no improvement, but some of the shippers look for a better supply of cars within a few days, as they expect that coal for shipment up the Lakes will be moving more freely to Lake ports. Boats are still being held up for from a week to 10 days in some cases and some vessel interests are now refusing to send their boats with cargoes to ports where the congestion is most acute, as they object to standing the loss entailed by tying up their boats for several days. Some of the furnaces are trying to secure additional dock space, but find practically none available. Most of the dock space is already filled up so that most of the ore has to be sent forward to interior furnaces or delivered to Lake front furnaces. However, it is expected that the latter will soon have about all the ore they will require, as much of the ore has been going to these furnaces during the past few weeks. Representatives

of the mining companies and furnace interests appeared before the Interstate Commerce Commission, June 26, to protest against the application of the railroads for a flat increase of 22c. a ton in the rate on ore from the lower Lake docks to interior furnaces, and to the proposal of the Jones & Laughlin Steel Co. that the increase in rates be proportioned between the railroads making the haul from the mines to upper Lake ports and those carrying ore from the docks to the interior furnaces, the purpose of this application being to have whatever increase in rates allowed distributed between both Lake front and interior furnaces.

We quote, delivered lower Lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesaba Bessemer, \$7.20; Mesaba non-Bessemer, \$6.55.

**Pig Iron.**—A late order of the Interstate Commerce Commission diverting cars to the coal trade is checking pig iron shipments and may compel consumers in some sections to shut down their plants. Under the order pig iron can be shipped in gondola cars only in case the destination is in the general direction of the coal mines. The order does not cover low sided gondola cars, the supply of which is limited, and box cars which furnaces will not use for pig iron, as they will require loading by hand. The order will affect particularly shipments to Michigan and northern Indiana, and furnace men say that the ruling will practically shut off shipments to these territories. It will also stop some shipments from Cleveland to Chicago territory. Cleveland furnaces have asked for a ruling as to whether they will be permitted to use gondola cars for local shipments. Resale iron sold to the Ford Motor Co., Detroit, is still being offered in considerable quantities and is finding ready sale to the foundries that are having their regular source of supply cut off. This is in Northern, Southern and Virginia grades, and is being sold by brokers on the basis of \$44, furnace, for 1.75 to 2.25 silicon. Generally the market is dull and sales are limited to small lots of foundry iron for early shipment or last half at \$44 for No. 2 for last half and \$44 to \$45 for prompt shipment. One interest reports sales during the week aggregating 2500 tons in lots up to 500 tons. One Cleveland producer has withdrawn from the market. A sale of 1000 tons of 8 per cent silicon iron has been made to a Pittsburgh district consumer for last half delivery. Basic iron is quiet, but very firm, and purchasers say that if they had any to offer they could readily make sales at \$43.50.

We quote delivered Cleveland as follows, based on 40c. switching charge for local iron, a \$1.40 freight rate from Valley points, and \$5 from Birmingham:

|  |                  |
|--|------------------|
| Basic                                    | \$44.40          |
| Northern, No. 2 fdy., sil. 1.75 to 2.25. | \$44.40 to 45.40 |
| Southern foundry, sil. 2.25 to 2.75...   | 48.70            |
| Gray forge                               | 41.40            |
| Ohio silvery, sil. 8 per cent            | 58.90 to 60.40   |
| Standard low phos. Valley furnace        | 51.00 to 53.00   |

**Coke.**—Another advance of \$1 per ton to \$18 has been made on standard Connellsville foundry coke for prompt shipment, and sales are reported at that price. Shipments are very slow, but most foundries have a fair supply on hand.

**Bolts, Nuts and Rivets.**—Considerable bolt and nut business is being booked in the form of third quarter contracts. Specifications are good and prices are firm at the recent advance. There is a fair demand for rivets in small orders and specifications, but no large inquiries are coming out. A local maker is now taking orders only subject to prices prevailing at the time of shipment. The plant of the leading Cleveland manufacturer is being operated at only 60 to 70 per cent capacity owing to lack of steel.

**Finished Iron and Steel.**—There is a good volume of inquiry for finished iron and steel and considerable new business is being booked by mills in position to make early shipments. The demand from the automobile industries in the Detroit territory is apparently about as heavy as ever in spite of the reports of a slowing down of that industry. Locally, considerable steel was placed during the week by makers of automobile forgings and other parts. The car shortage is apparently more seriously affecting the shipment of steel than a week ago, particularly from the Pittsburgh district, and much steel is being shipped by truck to destination or on barges to outside shipping points. Plates are fairly active, considerable business being booked

for early shipment at the prevailing price of 3.50c., although 3.75c. is still being quoted by Cleveland mills. There is an increased demand for plates from tank shops and car builders, and considerable inquiry for plates for field oil tanks is pending. Prices on structural material are easier. One mill recently on a 4c. basis is taking plain material at 3.25c. and another is quoting 3.10c. With a falling off in building work some of the fabricating shops are offering stocks of plain material for resale at around cost prices. Some fabricators have been offering resale steel for several weeks, but heretofore they have tried to dispose of it at a profit. We note the sale of 800 tons of structural shapes for underframes for cars and 1200 tons of tank plates. The steel bar market continues very firm and mills able to make prompt shipment are still taking orders at 4c. A manufacturer of cold-drawn steel has placed 4000 tons for three months' requirements, 1000 tons at 4c., 1000 tons at 3c. and 2000 tons at 2.35c. We also note the sale of 1200 tons of spring steel at 4c. with the usual extra. Some implement manufacturers are also buying steel bars at 4c. for third quarter. A Cleveland mill has adjusted its price on open-hearth sheet bars at \$75 per ton for July shipment as compared with its June price of \$80. The only structural award is 157 tons for a bridge for the Otis Steel Co., taken by the American Bridge Co. Local warehouses have reduced the maximum price on plates and structural material from 5.10c. to 4.50c. Sheets continue in good demand and the call for lighter gages is still in excess of the supply. Consequently some consumers are substituting the heavier sheets. Prices show a further tendency downward, but some mills have not reduced their quotations. We quote black sheets at 6.50c. to 8c.; blue annealed, 5.50c. to 6.25c., and galvanized, 7.25c. to 8c.

Cleveland warehouses quote steel bars at 3.27c. to 4.50c.; plates, 3.57c. to 5c., and structural material, 3.70c. to 4.50c.

(Continued on page 52)

## Philadelphia

PHILADELPHIA, June 29.

The transportation situation, as it affects Eastern territory, is probably the most critical in the history of the American railroads. Relatively little steel, pig iron, scrap or other freight, except livestock and perishable foods, is being moved in the East, and with the prospect of a strike of shopmen on the Pennsylvania Railroad, which is now scheduled for Monday, July 5, the outlook is anything but promising. This strike was to have occurred to-day (Tuesday) but was postponed by the shopmen's leaders pending a conference at Pittsburgh, Thursday, July 1, at which there will be present representatives from all points, including New York, St. Louis, Chicago, Buffalo, Philadelphia and Baltimore.

Freight embargoes now in effect cover practically all points. The Pennsylvania Railroad has many embargoes, but one of the most serious is that which prohibits shipments to Philadelphia, Baltimore and to all points east of Newark, N. J., thus shutting out a part of New York State and all of New England. The Baltimore & Ohio has an embargo in effect against shipments east of Cumberland, Md., and the Philadelphia & Reading has embargoed shipments to Philadelphia and to all points on its New York division. The Norfolk & Western will not allow shipments on its lines north of Roanoke, Va., which ties up practically all of the Virginia blast furnaces. Shipments are not being accepted in most instances when cars are to be transferred from one road to another. The Pennsylvania refuses to take cars for transfer to the Delaware & Hudson at Wilkes-Barre, Pa., which shuts off the Northern territory from Eastern mills and furnaces.

Despite these railroad troubles, the first real market activity of importance in weeks occurred to-day, when several Eastern consumers of basic pig iron closed for round lots. Three Eastern steel makers took an aggregate of about 15,000 tons or more at \$43, furnace; a New England hardware company bought 500 tons

at \$44, furnace, and there were sales of about 6000 tons of off basic to a subsidiary of the Steel Corporation. Sales of standard low phosphorus iron totalled 6000 tons, of which 5000 tons was bought by an Eastern steel company. Two New England consumers are negotiating for 5000 and 3000 tons, orders for which are expected to go to Buffalo furnaces.

The coke situation is precarious and a number of Eastern furnaces are banked for are on the verge of banking because they cannot get sufficient fuel. One furnace operator to-day paid \$18, Connellsville, with a freight rate of \$5, to keep his stack in blast.

The steel market is quiet, but with the exception of plates, shapes and sheet bars there is no softening of prices. It is reliably reported that at least one sale of plates has been made by an independent mill at 3.25c., Pittsburgh, while as low as 3c., Pittsburgh, is reported on shapes. Most of the mills are quoting 3.50c. to 3.75c., Pittsburgh, on plates and 3.25c., Pittsburgh, on shapes. Sheet bars have been sold at around \$70 by a company which is now rolling them on a rail mill. A factor which has probably contributed to the softness in plates is the sale of export lots, which could not be loaded on boats owing to the longshoremen's strikes. In most instances fairly high prices have been obtained for such material, but the sales have taken out of the market buyers who would otherwise have patronized the mills.

In scrap, the only feature is the sale of about 150,000 tons of melting steel to England at prices ranging from \$25 to \$30, Atlantic seaboard.

**Ferroalloys.**—Spot ferromanganese is now available at \$225, delivered, while the price for delivery over the second half remains at \$200. A sale of a car-load of ferromanganese is reported at slightly less than \$225. Spiegeleisen is not in demand and remains nominally quoted at \$75, furnace. Two cargoes of British ferromanganese are in the port of Philadelphia awaiting unloading.

**Pig Iron.**—The pig iron market, which has been in a somewhat lethargic condition for weeks, was in a state approaching excitement to-day because of the sudden demand for basic iron from several Eastern consumers. Upward of 15,000 tons was sold to three Eastern steel makers, including a plate company, which took 8000 tons or more, another plate company, which took 2500 tons or more, and a wire rope manufacturing company, which bought 6000 tons. The sellers were two Eastern steel companies and the prices are said to have been uniform on all sales, namely, \$43, furnace, but the freight rate to destination varies. The delivered prices range from \$44.10 to \$44.80. A sale of 500 tons was made to a New England hardware company at \$44, Eastern furnace. Two other New England consumers, one at Bridgeport, Conn., and the other at Providence, R. I., are in the market for 5000 tons and 3000 tons of basic respectively, but the business is expected to go to Buffalo furnaces. The American Bridge Co., which needs basic iron at its Pencoyd works, because of the difficulty in getting shipments through from Pittsburgh, was not willing to pay the prices asked by merchant furnaces; hence it bought about 6000 tons of off iron, which had been in the yards of two furnaces, at a considerable reduction from the basic iron price. In addition to the activity in basic, there have been sales of low phosphorus iron. An Eastern steel company has bought 5000 tons of copper free iron at \$54, furnace, with a freight rate of \$3.80, and other sales of this grade make a total for the week of about 6000 tons. In addition, a maker of copper bearing low phosphorus iron, which advanced its price to \$50 last week, closed orders for 2500 tons just before the advance took effect. There is a little better inquiry for foundry iron, several consumers who are not fully covered for last half having come into the market in the last week. The inquiries are small, however, mostly of a few hundred tons each. Foundry iron prices are firm, except that some Virginia furnaces, which attempted to get \$45, furnace, have weakened slightly and some of them are now willing to sell at \$44, furnace, and, in fact, have closed transactions on the latter basis. High silicon iron commands a good price

(Continued on page 56)

## San Francisco

SAN FRANCISCO, June 22.

There seems to be no doubt that the construction of several office and business blocks of considerable size is about to be undertaken. A recent survey of available business space showed this to be almost nil, and advances in rents have brought about a condition where large buildings can be constructed at present costs with reasonable assurances of profit. The Southern Pacific Railroad is planning a six-story reinforced concrete building which will practically cover a site 275 x 825 ft. Four of the largest wholesale grocers in the city have arranged to lease space in the building. If constructed as planned, about 2,000 tons of reinforcing bars will be needed.

**Bars.**—Notwithstanding the continued unfavorable export condition, bars are holding up well at 4.75c. The mills are reasonably busy, and the large number of smaller reinforced concrete buildings going up all over the State seem to be able to take care of the bulk of the output.

**Structural Steel.**—The buildings for the Air Coast Defense Station at the Presidio, San Francisco, with the paving, sewerage, pipe, etc., necessary, have just been contracted for at a total cost of \$1,133,600, and will include a large hangar 220 x 260 ft., a garage and a large machine shop for repair work. These buildings

will take 650 tons of structural steel, and they constitute the largest single job recently developed.

**Wrought Pipe.**—The situation regarding wrought pipe shows no improvement. The supply in the hands of jobbers is said to be lower than ever. One dealer states that he recently received a shipment of pipe that was nearly six months on the road. This is regarded as a hopeful sign, as it indicates the eastern railroads are clearing up their yards. No San Francisco prices are quoted on wrought pipe, all figures being given on f.o.b. Pittsburgh base plus freight. As various mills make different prices, no base price can be given as the San Francisco quotation.

**Cast Iron Pipe.**—The stocks of 4 in. to 12 in. water pipe usually carried in San Francisco are very low at the present time, and while there is no change in price, the market is strong on the number of inquiries for future delivery. The Los Angeles water department has just received bids for 650 tons of 4 in. pipe, and bids have been submitted for the pipe needed in the development of the Air Coast Defense Station at the Presidio in this city. Cast iron pipe is quoted at \$93.80 base, ex. war tax, f.o.b. San Francisco for the 6 in. and larger, Class B and heavier. The 4-in. iron pipe is \$3 per ton more, and Class A gas pipe is \$2 per ton more than the base.

**Old Material.**—There were no recent developments in scrap in this market. Heavy melting steel is still quoted at \$27 and cast iron scrap at \$47.50.

## Pittsburgh Iron and Steel Market

(Continued from page 37)

**Iron and Steel Pipe.**—Acuteness of the supply situation is unrelieved and, in fact, even more pronounced this week than it has been previously, due to the fact that makers are feeling acutely the shortage of cars. In the Youngstown district makers are able to ship only a small fraction of production, as is illustrated in the case of the Republic Iron & Steel Co., which has five of its six pipe furnaces in operation, but is laying down on the average of about 500 tons per day for which shipping facilities are not available. The National Tube Co. is managing to keep its plants going, but there are partial interruptions from time to time. This company is allotting its shipments in the effort to give all customers some supplies. Discounts on iron and steel pipe are given on page 49.

**Coke.**—The market maintains a strongly upward tendency on spot tonnages of both furnace and foundry coke, especially the former, sales of which have been done in the past few days at \$18 per net ton at oven. Sales involving at least 100 cars, in most cases for shipment this week, have been made at that figure, and some furnace coke is moving this week at \$16. This business was concluded several days ago and \$17 appears to be the high minimum. Consumers report several offers of furnace coke at \$17. Spot tonnages of foundry coke are commanding from \$17 to \$18, and in both furnace and foundry coke for last half shipment prices are at a considerable discount from the spot market. At least two good-sized last half furnace coke contracts have been negotiated for this week at \$11.50 and \$12 per net ton at oven, and the contract market on foundry grades probably is quoted at higher than \$14. Practically all consumers of foundry coke have concluded negotiations for last half supplies, and such business is taken to range from \$10 to \$12 per net ton at oven. Output of coke in the Upper and Lower Connellsville region for the week ending June 19 was 178,730 tons, a decrease from the previous week of 6500 tons.

**Old Material.**—The recent order of the Interstate Commerce Commission sending all open-top railroad equipment to the coal mines is exerting a restrictive effect upon the movement of scrap iron and steel on contracts and is creating a demand for material already

loaded on cars for which cars are available that has resulted in somewhat higher prices than recently prevailed on what might be classified as spot or prompt tonnages. Sales of such lots of heavy melting steel are reported up to \$27, delivered, but this price cannot be fairly given as a quotation because only small tonnages are involved and in some instances this price has been paid because the shipment provided the buyer with an empty car or two for the loading of some finished material. Generally, it must be said that the demand for the steel works grades is moderate, due to the fact that the shipments of steel again are on such a limited scale as to give basis for expectations of an early curtailment of steel-making capacity. Marked strength prevails in all kinds of cast scrap, demands for which considerably exceed the offerings. The railroads are reported to be buying cast-iron car wheels to turn in against their orders for new wheels. The market is stronger on rerolling rails, due to the fact that several dealers have short sales to cover, while users actively are seeking supplies. The July scrap list of the Pennsylvania Railroad, Eastern Region, offers 17,090 gross tons of material, bids for which must be in by July 7. The largest items are 1800 tons of steel rails, 1320 tons of No. 1 wheels and 1350 tons of unassorted scrap, the latter lying at Altoona, Pa.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates, as follows:

|   |                    |
|---|--------------------|
| Heavy melting steel. Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, deliv. | \$25.50 to \$26.00 |
| No. 1 cast.....   | 40.00 to 41.00     |
| Rerolling rails. Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh.....      | 34.00 to 35.00     |
| Compressed sheet steel.....   | 22.00 to 22.50     |
| Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.                               | 15.00 to 16.00     |
| Railroad knuckles and couplers.....   | 29.00 to 30.00     |
| Railroad coil and leaf springs.....   | 29.00 to 30.00     |
| Railroad grate bars.....  | 30.00 to 31.00     |
| Low phosphorus melting stock (bloom and billet ends, heavy plates) $\frac{1}{4}$ in. and heavier..... | 31.00 to 32.00     |
| Railroad malleable.....   | 32.00 to 33.00     |
| Iron car axles.....   | 50.00 to 51.00     |
| Locomotive axles, steel.....  | 36.00 to 37.00     |
| Steel car axles.....  | 36.00 to 37.00     |
| Cast iron wheels.....   | 43.00 to 44.00     |
| Rolled steel wheels.....  | 29.00 to 30.00     |
| Machine shop turnings.....  | 14.00 to 14.50     |
| Sheet bar crop ends (at origin).....  | 30.00 to 31.00     |
| Heavy steel axle turnings.....  | 22.00 to 23.00     |
| Heavy breakable cast.....   | 33.00 to 34.00     |
| Cast iron borings.....  | 18.00 to 19.00     |
| No. 1 railroad wrought.....   | 31.00 to 32.00     |

## EUROPEAN COMPETITION GROWS IRON AND INDUSTRIAL STOCKS

## England, Belgium and Germany Offer Material for Export—England Buys Plates and Shapes

According to later information regarding the syndicate of Japanese steel importers formed to purchase resale material, it will operate only in the eastern district of Japan, of which Tokio is the principal city, and will not attempt to make purchases in the western district controlled by Osaka. An export representative who has returned from Japan, reports that conditions at the ports are still far from being greatly improved. With the warehouses filled much of the material has been unloaded on the docks or in open spaces, and although consumers to whom it is consigned express a willingness to accept it, all they can offer in a majority of cases is their notes, which the banks will not discount. There is a feeling among exporters dealing with the Far East that Japan has indefinitely lost her former position of distributor of iron and steel to the Orient. The disaffection of Japan has forced these markets to turn to the source of supply, the United States, and exporters believe that the superior American knowledge of iron and steel will go a great way toward offsetting distance and other differences.

Unless it can see prospects of delivery within 60 days, one of the large export houses in New York is not attempting to book orders except in unusual instances. At present shipments of this company are about equal to new orders and undelivered tonnage remains practically as large as it was two months ago with little prospect for improvement this year. While some exporters are still shipping through the port of Philadelphia despite the congestion, others are finding movement of freight easier to Boston.

England still heads the list as the largest buyer of ship plates and shapes and is also a heavy buyer of bars. Great Britain is evidently "coming back" rapidly to her former position as a re-exporting country. Many exporters are receiving reports from South American representatives that British and Belgian material is appearing in Latin-American markets in increasing quantities, and although numerous orders are still being placed in the United States there is the prospect of heavy cancellations if a sudden softening in American prices should occur. Since the railroad tangle, American deliveries are, as a rule, not much better than European. Reports of foreign competition are also being received from representatives in the Dutch East Indies, who for the first time in months report lower priced material being offered, probably from Japan. Germany also is offering material of various kinds for export. A New York warehouse has received an offer from a Frankfort company of drill rods of high-grade carbon steel of chrome alloy or vanadium tungsten steel.

A concern dealing with European markets reports a good business with Sweden and fair purchase of pig iron by Belgium. Sweden is inquiring for both pig iron and wire rods and this company recently received an inquiry for a large quantity of coke. Not anxious for the business, believing present prices too high, the company quoted on coke which cost it \$17 per ton, f.o.b. oven, and the Swedish buyer accepted.

The increase in business has not as yet begun to benefit the exporter, who is facing transportation conditions that preclude early delivery and increase his costs.

The National Association of Purchasing Agents, New York, which includes about 3500 members, has presented a series of recommendations on the coal situation to the Interstate Commerce Commission. The recommendations point out that the "assigned car" principle is detrimental to the interests of industry and suggest that the President's order of May 25, 1918, with the single word "war" deleted is applicable to the present situation. A second recommendation calls for the abolition of the practice of commandeering of coal by railroads and a third suggests an embargo on the exportation of coal until such time as domestic requirements are met.

## Net Changes in Quotations for the Past Week Are Small

The market for iron and industrial stocks has continued irregular, with the net changes for the past week small. The most conspicuous feature of the market of late has been the contraction of business transacted daily on the various stock exchanges. This fact probably is largely due to a temporary unusual scarcity of funds and high loaning money rates resulting. This situation probably will be relieved to a considerable extent by fresh imports of gold.

Manufacturing interests are watching foreign exchange rates with a view to increasing our export business. Of late sterling exchange rates have been higher than they have been before in several months, which is significant, according to bankers and industrial heads alike. A general view taken is that if our export business can be increased the chances for drastic reductions in prices for finished products are considerably lessened.

In banking circles one hears less talk of lower commodities prices than was the case a month ago. This fact, coupled with a settlement of the railroad labor and freight rate questions, and with the Democratic convention out of the way, should, in the opinion of many, make for constructiveness in the market for iron and industrial stocks.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

|                       |                   |                     |                   |
|-----------------------|-------------------|---------------------|-------------------|
| Allis-Chalm. com.     | 36 - 37           | Midvale Steel....   | 40 1/2 - 41 1/2   |
| Am. Can com.          | 39 1/4 - 40 1/2   | Nat. Acme .....     | 33 1/2 - 34 1/2   |
| Am. Can pf.           | 88 1/2 - 90 1/2   | Nat. E. & S. com.   | — - 69 1/2        |
| Am. C. & F. com.      | 136 1/4 - 140 1/4 | Nat. E. & S. pf.    | — - 93 1/2        |
| Am. Loco. com...      | 96 - 98 1/4       | N. Y. Air Brake.    | 98 - 100 1/4      |
| Am. Loco. pf....      | — - 99            | Nova Scotia Steel.  | 53 - 56 1/2       |
| Am. Steel F. com.     | 37 - 38 1/2       | Press. Steel com.   | 96 1/2 - 99 1/2   |
| Am. Steel F. pf....   | — - 86 1/2        | Press. Steel pf.... | — - 99 1/2        |
| Bald. Loco. com...    | 116 1/4 - 119 1/2 | Ry. Stl. Spg. com.  | — - 96            |
| Beth. Steel com...    | — - 87            | Replogle Steel...   | 81 - 85 1/2       |
| Beth. Stl. Cl. B...   | 88 - 90 1/2       | Republic com....    | 91 - 93 1/2       |
| Beth. Stl. 8% pf.     | 107 1/2 - 107 1/2 | Sloss com.....      | 68 1/2 - 71       |
| Case, J. I. pf....    | — - 94 1/2        | Superior Steel....  | 48 1/2 - 50       |
| Chic. Pneu. Tool....  | — - 96            | Transue-Williams.   | 51 1/2 - 52 1/2   |
| Colorado Fuel....     | 33 - 33 1/2       | Un. Alloy Steel...  | 42 1/2 - 44 1/2   |
| Cruc. Steel com...    | 143 1/2 - 149 1/2 | U. S. Pipe com...   | 16 - 16 1/2       |
| General Electric.     | 137 1/2 - 140 1/2 | U. S. Pipe pf....   | 43 1/2 - 45       |
| Gt. No. Ore Cert.     | 35 - 36           | U. S. Steel com...  | 91 1/2 - 93       |
| Gulf States Steel.... | — - 60            | U. S. Steel pf....  | 104 1/2 - 105 1/2 |
| Int. Har. com....     | 128 1/4 - 131     | Vanadium Steel...   | 82 1/2 - 84 1/2   |
| Int. Har. pf....      | 105 1/2 - 106     | Va. I. C. & Coke.   | 110 - 114         |
| Lackawanna Steel      | 69 1/2 - 72       | Westingh'se Elec.   | 49 1/2 - 49 1/2   |
| Lake Sup. Corp...     | 13 1/2 - 13 1/2   |                     |                   |

## Industrial Finances

The May sales of the National Acme Co., Cleveland, were \$1,712,994, and the net profits \$560,987, as compared with \$825,084 and \$212,525 respectively in May last year. For the five months ending May 31 last, the total sales were \$8,017,039, contrasted with \$4,427,633 for the corresponding period last year, and the net profits \$2,647,971, against \$1,260,585. The net profits in each instance are exclusive of income taxes, excess profits and capital stock taxes.

## OFFICE CHANGES

The Wagner Electric Mfg. Co., St. Louis, announces the opening of a sales office and service station at No. 2007 South Ervy Street, Dallas, Tex. Charles O. Rauschkolb is in charge as branch manager.

The Commercial Steel & Supply Co., Cleveland, dealer in scrap iron and steel has opened a Detroit office at 2226 Penobscot Building in charge of H. S. Finkenstaedt.

The Foster Machine Co., Elkhart, Ind., manufacturer of turret lathes and screw machines has recently opened a New York office at the Grand Central Palace, in charge of L. S. Devos.

The Industrial Materials Co., Inc., New York, announces the removal of its offices from 50 Pine Street to 132 Nassau Street.

## Non-Ferrous Metals

### The Week's Prices

Cents Per Pound For Early Delivery

| June | Copper   |       | Lead              |             | Zinc        |              |             |
|------|----------|-------|-------------------|-------------|-------------|--------------|-------------|
|      | New York | Lake  | Electro-<br>lytic | New<br>York | New<br>York | St.<br>Louis | New<br>York |
| 23   | 19.00    | 19.00 | 49.00             | 8.25        | 8.00        | 7.85         | 7.50        |
| 24   | 19.00    | 19.00 | 47.00             | 8.25        | 8.00        | 7.85         | 7.50        |
| 25   | 19.00    | 19.00 | 47.00             | 8.25        | 8.00        | 7.85         | 7.50        |
| 26   | 19.00    | 19.00 | ...               | 8.25        | 8.00        | 7.85         | 7.50        |
| 28   | 19.00    | 19.00 | 49.00             | 8.25        | 8.00        | 7.90         | 7.55        |
| 29   | 19.00    | 19.00 | 48.50             | 8.25        | 8.00        | 7.90         | 7.55        |

NEW YORK, June 29.

Demand for all the metals is light, but prices are fairly steady. Buying of copper has improved both for forward delivery and for foreign shipment. The tin market is only moderately active with prices fairly steady. Lack of life still characterizes the zinc market, but in spite of this prices are steady. Antimony is slightly lower.

### New York

**Copper.**—Two interesting developments in this market have been a better demand by consumers for forward delivery, sales having been made for last quarter at the full price of 19c., New York, and a better demand from foreign countries. Otherwise general conditions are unchanged. Producers continue firm in their quotation of 19c., New York, for both electrolytic and Lake copper for third quarter delivery. It is possible to buy limited amounts of electrolytic copper from small producers and dealers as low as 18.25c., New York, but it is understood that business of this nature is extremely light.

**Tin.**—For the greater part of the past week the market has been very dull, consumers showing no desire to enter the market and with most transactions confined to dealers. Total sales for all positions have not exceeded 300 tons, most of them occurring the latter part of last week. On Friday 200 tons of future shipment was sold on the Metal Exchange at 45.75c. to 46c. On both Friday and Saturday there was a fair demand, mostly from dealers, but there were more buyers than sellers and as a result very little metal was obtainable either for future or spot shipment. The conditions which prevailed on Friday and Saturday have also been characteristic of the early part of this week, buying again appearing on the part of dealers, but with few sellers apparently willing to part with their holdings. As a result there has been but little business in the last day or so with 46.75c. bid and 47c. asked for future shipment, and 48.75c. bid for spot delivery and 49c. asked. The scarcity of spot Straits is a feature of the market. The recent advance in the quotation for spot metal over that for future shipment appears to be explained by the covering of shorts on contracts for June delivery. The opinion is expressed that when this is accomplished the prompt price will more nearly approach that for future shipment. Spot Straits, New York, is quoted today at 48.50c. per lb., with the London quotation at £260 per ton. A week ago the latter quotation was £270.

**Lead.**—Buyers of lead seem comfortably supplied and therefore show no desire to enter the market. Producers appear to be catching up in production only very slowly and are not pressing the market. As a result the market is quiet and featureless with prices firm. The quotation of the leading interest is unchanged at 7.75c., St. Louis, or 8c., New York, while that of the outside market is 8c., St. Louis, or 8.25c., New York, both for wholesale lots for early delivery.

**Zinc.**—There continues to be very little demand for zinc and conditions are unchanged from those which have obtained for several weeks. Leading producers are only taking care of intermittent hand-to-mouth orders at prevailing quotations. Prime Western for delivery in the next two or three months is quoted at 7.55c., St. Louis, or 7.90c., New York.

**Antimony.**—Wholesale lots for early delivery are quoted at 7.50c. to 7.75c., New York, with the market extremely quiet.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, for early delivery in wholesale lots is quoted at 33c., New York, by the leading interest and 31.50c. by outside sellers.

**Old Metals.**—The week has seen a little activity in the market and sentiment has been better. Dealers' selling prices are nominally as follows:

|  | Cents<br>Per Lb. |
|--|------------------|
| Copper, heavy and crucible.....              | 18.25            |
| Copper, heavy and wire.....                  | 17.25            |
| Copper, light and bottoms.....               | 15.00            |
| Brass, heavy .....                           | 13.00            |
| Brass, light .....                           | 8.50             |
| Heavy machine composition.....               | 17.75            |
| No. 1 yellow rod brass turnings.....         | 10.50            |
| No. 1 red brass or composition turnings..... | 15.00            |
| Lead, heavy .....                            | 7.75             |
| Lead, tea .....                              | 6.00             |
| Zinc .....                                   | 5.75             |

### Chicago

June 29.—Copper is quiet, no particular interest being manifested in spot material and futures being held up pending a settlement of the railroad wage problem. Tin is slow and stationary as to price. Lead is more active but the premiums for June shipment have disappeared. Spelter is quiet but has advanced by way of reaction from a level which was very low in relation to production costs. Active inquiry is expected to bring a decided rise in price. Antimony has advanced one cent as a result of purchases by buyers who had deferred closing for their requirements. In the old metals red brass, lead pipe and tin foil have declined. We quote Lake copper at 19c. to 19.25c. in carload lots; tin, 51c. to 52c.; lead, 8.25c.; spelter, 7.75c.; antimony, 10c. On old metal we quote copper wires, crucible shapes, 13.25c.; copper clips, 13.25c.; copper bottoms, 11.25c.; red brass, 13.25c.; yellow brass, 9c.; lead pipe, 6c.; zinc, 4.25c.; pewter, No. 1, 25c.; tin foil, 30c.; block tin, 40c., all these being buying prices for less than carload lots.

### St. Louis

June 26.—A slightly firmer tone has developed in the non-ferrous markets. Lead picked up materially during the week, closing around 8.25c., against 7.75c. at the close of the preceding week. The slack in offerings has been fairly well taken up by purchasing by paint and storage battery supply people. Plumbing supply houses have also been in the market for small tonnages. Zinc is quiet but quotably firmer, closing at 7.50c., against 7.40c. the week before. In less than car lots the quotations were: Lead, 8.75c.; spelter, 8.50c.; tin, 50c.; copper, 19.50c.; antimony, 10.50c. In the Joplin district ores were steady. Zinc blonde ores ranged from \$42.50 to \$45, depending upon the grade, while lead ore sold at \$100. Trading in lead ores was on a large scale but little was done in zinc ore. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 9c.; heavy red brass, 15c.; light copper, 13c.; heavy yellow brass, 10.50c.; heavy copper and copper wire, 16c.; zinc, 5c.; lead, 6c.; pewter, 35c.; tinfoil, 43c.; tea lead, 3c.; aluminum, 24c.

### Iron Production of Algeria

WASHINGTON, June 29.—Production of minerals in Algeria in 1919 declined below the 1918 totals, according to statistics forwarded by Consul Arthur C. Frost, at Algiers. The loss is attributable to labor shortage, insufficient means of transportation and numerous strikes which materially impaired conditions of the year. Figures on iron production in the three divisions of Algeria show that in Oran the production in 1918 amounted to 479,014 metric tons, while it declined in 1919 to 378,243 metric tons. Shipments in 1918 were 455,063 metric tons, and in 1919 391,882 metric tons. In Algiers the production of iron in 1918 amounted to 271,033 metric tons, and in 1919 to 254,050. Shipments were 238,073 metric tons in 1918, and 257,298 in 1919.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, with revisions effective from Jan. 1, 1920, in carload lots, to points named, per 100 lb., are as follows:

New York, 27c.; Philadelphia, 25c.; Boston, 29½c.; Buffalo, 21c.; Cleveland, 17c.; Cincinnati, 23½c.; Indianapolis, 24½c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; all in carloads, minimum 36,000 lb. To Denver the rate is 99c., minimum carload 40,000 lb.; Omaha, 59c., minimum carload 36,000 lb.; New Orleans, 38½c.; minimum carload 36,000 lb.; Birmingham, 57½c., minimum carload 36,000 lb. To the Pacific Coast the rate is \$1.25 per 100 lb. on articles of iron and steel, minimum carloads 80,000 lb., while the structural steel rate is \$1.25, minimum carload 50,000 lb., or \$1.315, minimum carload 40,000 lb. The rate on ship plates, Pittsburgh to Pacific Coast, is \$1 per 100 lb., minimum carload 80,000 lb. On wrought iron and steel pipe, the rate from Pittsburgh to Kansas City is 56c., to St. Paul, 49½c.; to Denver, 99c.; to Omaha, 56c., all in carload lots, minimum 46,000 lb. To Jacksonville, Fla., all rail carloads, 41½c., minimum 36,000 lb., less than carloads, 59c.; rail and water, carloads 34½c., minimum 36,000 lb.; less than carloads 46½c. On iron and steel items not noted above, the rates vary somewhat, and are given in detail in the regular railroad tariffs.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs,  $\frac{1}{4}$  in. thick and over, and zees, structural size, 2.45c. to 4c.

## Wire Products

Wire nails, \$3.25 to \$4 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 and shorter than 1 in., \$2. Bright basic wire, \$3 to \$3.50 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3 to \$3.50; galvanized wire, \$3.70 to \$3.95; galvanized barbed wire and fence staples, \$4.10 to \$4.45; painted barbed wire, \$3.40 to \$3.75; polished fence staples, \$3.40 to \$4.50; cement-coated nails, per count keg, \$2.85 to \$3.75; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60 per cent off list for carload lots, 59 per cent for 1000-rod lots, and 58 per cent for small lots, f.o.b. Pittsburgh.

## Bolts, Nuts and Rivets

Large structural and ship rivets..... \$4.50 base  
Large boiler rivets..... 4.60 base  
Small rivets..... 40 per cent off list  
Small machine bolts, rolled threads. 40 and 5 per cent off list  
Same sizes in cut threads..... 40 and 10 per cent off list  
Longer and larger sizes of machine bolts. 30 per cent off list  
Carriage bolts,  $\frac{3}{8}$  in. x 6 in.:  
    Smaller and shorter, rolled threads. 30 and 10 per cent off list  
    Cut threads..... 30 per cent off list  
    Longer and larger sizes..... 25 per cent off list  
Lag bolts..... 45 per cent off list  
Plow bolts, Nos. 1, 2 and 3 head..... 40 per cent off list  
    Other style heads..... 20 per cent extra  
Machine bolts, c.p.c. and t. nuts  $\frac{1}{4}$  in. x 4 in.:  
    Smaller and shorter..... 30 per cent off list  
    Longer and larger sizes..... 26 per cent off list  
Hot pressed and cold pressed sq. or hex. blank nuts..... \$1.50 off list  
Tapped nuts..... \$1.00 off list  
Sem-finished hex. nuts, U. S. S. and S. A. E.:  
     $\frac{5}{8}$ -in. and larger..... 50 and 10 per cent off list  
    9/16-in. and smaller..... 50 and 10 per cent off list  
    9/16-in. and smaller, A. L. A. M. or S. A. E.,  
        70, 10 and 5 per cent off list  
Stove bolts in packages..... 70 and 10 per cent off list  
Stove bolts in bulk..... 70, 10 and 2 1/2 per cent off list  
Tire bolts..... 55 and 10 per cent off list  
Track bolts..... 6c. base  
    One cent per lb. extra for less than 200 kegs. Rivets in  
100-lb. kegs 25c. extra.  
All prices carry standard extras f.o.b. Pittsburgh.

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52 to \$70; chain rods, \$75 to \$80; screw rivet and bolt rods and other rods of that character, \$65 to \$70. Prices on high carbon rods are irregular. They range from \$75 to \$100, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes,  $\frac{1}{2}$  to 9/16 in. and larger, \$1 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes,  $\frac{1}{4}$ -in. and 7/16-in., \$4.25; 5/16-in., \$5; track bolts, \$4.90 to \$5. Boat and barge spikes, \$4.50 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, \$3 to \$4 per 100 lb.

## Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coating, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 2.35c. to 4c. from mill. Common bar iron, 4.50c.

## Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing date, discounts on steel pipe applying as from Jan. 14, 1920, and on iron pipe from Jan. 7, 1920:

| Steel   |             | Iron                                |                |
|---|-------------|-------------------------------------|----------------|
| Inches.   | Black Galv. | Inches.                             | Black Galv.    |
| $\frac{1}{8}$ , $\frac{1}{4}$ and $\frac{3}{8}$ ... | 47 20 1/2   | $\frac{1}{8}$ and $\frac{1}{4}$ ... | 1 + 25         |
| $\frac{1}{2}$ ...                                   | 51 36 1/2   | $\frac{1}{2}$ ...                   | 25 1/2 + 1 1/2 |
| $\frac{3}{4}$ to 3...                               | 54 41 1/2   | $\frac{1}{2}$ to $\frac{1}{2}$ ...  | 29 1/2 11 1/2  |
|   |             | $\frac{1}{2}$ to 1 1/2...           | 34 1/2 18 1/2  |
|   |             | 2 and 2 1/2...                      | 33 1/2 17 1/2  |

| Lap Weld      |           |
|---------------|-----------|
| Butt Weld     |           |
| 2...          | 47 34 1/2 |
| 2 1/2 to 6... | 50 37 1/2 |
| 7 to 12...    | 47 33 1/2 |
| 13 and 14...  | 37 1/2    |
| 15...         | 35        |

| Lap Weld, extra strong, plain ends  |           |
|-------------------------------------|-----------|
| Butt Weld, extra strong, plain ends |           |
| 1/8, 1/4 and 3/8...                 | 43 25 1/2 |
| 1/2...                              | 48 35 1/2 |
| 3/4 to 1 1/2...                     | 52 39 1/2 |
| 2 to 3...                           | 53 40 1/2 |

| Lap Weld, extra strong, plain ends |              |
|------------------------------------|--------------|
| 2...                               | 45 33 1/2    |
| 2 1/2 to 4...                      | 48 36 1/2    |
| 4 1/2 to 6...                      | 47 35 1/2    |
| 7 to 8...                          | 43 29 1/2    |
| 9 to 12...                         | 38 24 1/2    |
| 1 1/4...                           | 21 1/2 6 1/2 |

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

## Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

| Lap Welded Steel     |        | Charcoal Iron            |         |
|----------------------|--------|--------------------------|---------|
| 3 1/2 to 4 1/2 in... | 40 1/2 | 1 1/4 and 1 1/2 in...    | + 20    |
| 2 1/2 to 3 1/4 in... | 30 1/2 | 2 and 2 1/4 in...        | + 10    |
| 2 1/2 in...          | 24     | 2 1/2 and 2 3/4 in...    | + 1     |
| 1 1/4 to 2 in...     | 19 1/2 | 3 and 3 1/4 in...        | - 1 1/2 |
|                      |        | 3 1/2, 4 and 4 1/4 in... | - 8     |

| Standard Commercial Seamless—Cold Drawn or Hot Rolled |                      |
|---|----------------------|
| Per Net Ton   | Per Net Ton          |
| 1 in...   | \$327                |
| 1 1/4 in...   | 267                  |
| 1 1/2 in...   | 257                  |
| 1 1/2 in...   | 207                  |
|   | 1 1/4 in...          |
|   | 2 to 2 1/2 in...     |
|   | 2 1/2 to 3 1/4 in... |
|   | 4 in...              |
|   | 4 1/2 to 5 in...     |

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiations.

## Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For reasonably prompt delivery, mills have no trouble in getting prices quoted in the right-hand column, or even higher prices.

## Blue Annealed—Bessemer

|                         | Cents per lb |
|-------------------------|--------------|
| No. 8 and heavier...    | 3.50 to 5.95 |
| Nos. 9 and 10 (base)... | 3.55 to 6.00 |
| Nos. 11 and 12...       | 3.60 to 6.05 |
| Nos. 13 and 14...       | 3.65 to 6.10 |
| Nos. 15 and 16...       | 3.75 to 6.20 |

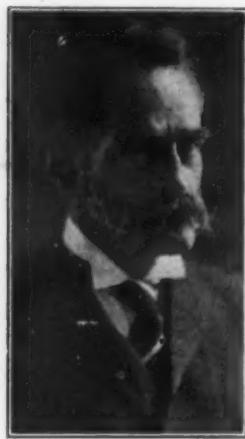
| Box Annealed, One Pass Cold Rolled—Bessemer |
|---|
| Nos. 17 to 21...                            |
| Nos. 22 to 24...                            |
| Nos. 25 and 26...                           |
| No. 27...                                   |
| No. 28 (base)...                            |
| No. 29...                                   |
| No. 30...                                   |

| Galvanized Black Sheet Gage—Bessemer |
|--------------------------------------|
| Nos. 10 and 11...                    |
| Nos. 12 to 14...                     |
| Nos. 15 and 16...                    |
| Nos. 17 to 21...                     |
| Nos. 22 to 24...                     |
| Nos. 25 and 26...                    |
| No. 27...                            |
| No. 28 (base)...                     |
| No. 29...                            |
| No. 30...                            |

| Tin-Mill Black Plate—Bessemer |
|-------------------------------|
| Nos. 15 and 16...             |
| Nos. 17 to 21...              |
| Nos. 22 to 24...              |
| Nos. 25 to 27...              |
| No. 28 (base)...              |
| No. 29...                     |
| No. 30...                     |
| Nos. 30 1/2 and 31...         |

## PERSONAL

James P. Roe, engineer and metallurgist, has been appointed general superintendent of the Reading Iron Co., Reading, Pa., manufacturer of wrought iron pipe.



JAMES P. ROE

Mr. Roe, many years ago, at the age of 12, started as an apprentice at Consett, a small town in the North of England, went through the pattern shop, machine shop and drafting room, and became assistant mechanical engineer of the Consett Works. Coming to America at the age of 23, he became associated with the Pottstown Iron Co. and worked up through the various grades to the position of general superintendent. In 1890 he resigned to become general superintendent of the Glasgow Iron Co.'s interests. In March, 1898, his sphere

was enlarged when the company leased the plants of the Pottstown Iron Co. Mr. Roe is the inventor of the Roe mechanical puddler which was first developed successfully, from an experimental standpoint, at Pottstown. Several years ago the Reading Iron Co. obtained exclusive rights to this invention for the manufacture of pipe and built a plant with the purpose of placing the mechanical puddler on a successful production basis. This object was not far from being attained, when the war and restrictions on building operations, together with the illness of George Schuhmann, then vice-president of the Reading Iron Co., made it necessary to close the plant for two years. The first of this year the department was again put into operation, and it is expected that now, as Mr. Roe has the opportunity to give his personal attention to the development of this process, it will soon be operating successfully on a production basis.

E. H. Simonsen, formerly machine shop superintendent Wright Works, Chicago, and E. C. Koons, formerly manager machinery department, Mine & Smelter Supply Co., Denver, Col., have formed the firm of Simonsen-Koons and will deal in new and used machine tools at 8 North Desplaines Street, Chicago, where they have leased a store. They are negotiating for the machine-tool equipment in three manufacturing plants, totaling in value about \$1,500,000, and will place it on the market. Associated with Simonsen-Koons are C. T. Kimball, formerly manager of the machinery department of Harris Bros., Chicago, for 15 years, and C. T. Thompson, for many years with the Jones & Lamson Machine Co., Springfield, Vt.

C. H. Brown has been named to succeed the late George Kimes as roll designer of the Crescent works of the Crucible Steel Co. of America, Pittsburgh.

Leon R. German has been appointed vice-president and director of the Olds Motor Works, Lansing, Mich. He has been long connected with the Olds organization, and two years ago was elected comptroller.

Timothy J. Driscoll has been named plant engineer of the Pittsburgh Crucible Steel Co., Midland, Pa., succeeding William H. Kent, who resigned recently. Mr. Driscoll has been with the company for a number of years and latterly had been assistant plant engineer.

Some new appointments have been made in the organization of the Westinghouse Electric International Co., East Pittsburgh. H. F. Griffith has been made assistant to general manager; R. W. Everson, manager of merchandising department; H. C. Soule, manager apparatus department, and H. R. Reizenstein, manager

price department. In New York, G. H. Bucher has been made assistant to general manager; J. H. Payne, supervisor of agencies, and F. M. Sammis, manager of incandescent lamp department. A. B. Cole, assistant manager department of publicity, Westinghouse Electric & Mfg. Co., has been placed in charge of advertising and promotion work for the Westinghouse Electric International Co. Foreign managers of the Westinghouse Electric International Co. have been named as follows: F. M. Rodgers, London, Eng., European manager; J. W. White, Royal Bank of Canada Building, Havana, Cuba, manager for Cuba; L. T. Peck, Bartolome Mitre, 754, Buenos Aires, manager for the Argentine. The personnel of the railway department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, has been rearranged and promotions made as follows: W. R. Stinemetz is manager of the heavy tractions section, with Franklin W. Carter in charge of both foreign and domestic negotiations; E. D. Lynch is manager of the light traction equipment section, with George Skipton in charge of negotiations; J. L. Crouse is manager of the new railroad apparatus and supply section, and K. A. Simon is manager of the safety car and foreign railroad equipment section.

T. J. McGill, general foreman Ohio Works, Carnegie Steel Co., at Youngstown, Ohio, has been granted a leave of absence to visit relatives in Ireland and to visit England and parts of the continent. He sailed July 1 from New York. Employees presented him a watch prior to his departure.

G. Roy Bennett, brother of W. T. Bennett, Alley & Page, Boston, will be in charge of the new office recently established by that firm at 212 Hospital Trust Building, Providence, R. I. For the past year or so Mr. Bennett has been assistant machine shop superintendent of one of the largest eastern Massachusetts foundry companies. He served 18 months on the other side during the war and at the time of his discharge was top sergeant, 149th Aero Pursuit Squadron. He and E. T. Ragsdale designed the cone-fire aircraft gun, which was accepted by the English Air Board. Mr. Bennett also designed an automatic clutch for the machine gun F 2 B machine, which also was accepted by the English authorities. Providence is fast becoming one of the leading foundry centers of New England. The new office will handle all of the various brands of pig iron and coke sold through the Alley & Page Boston and New York offices.

Edward M. Herr, president Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently was elected a member of the board of trustees of the Yale University Corporation.

James H. Sheppard, formerly assistant to works manager of the Bucyrus Co., South Milwaukee, Wis., and Evansville, Ind., has resigned, effective July 1, to become assistant production manager of the Clark Avenue plant of the Timken-Detroit Axle Co., Detroit.

Patrick J. Nestor, formerly with the Witherow Steel Co., Pittsburgh, has assumed his new duties as superintendent of the Peerless Drawn Steel Co., Massillon, Ohio.

W. H. Leech, formerly roll designer of the Witherow Steel Co., Pittsburgh, has resigned to go with the Peerless Drawn Steel Co., Massillon, Ohio, in a similar capacity.

At the meeting of the Spicer Mfg. Co., South Plainfield, N. J., B. Benson was elected vice-president, succeeding H. D. Williams, resigned.

Alfred Herbert, Ltd., machine tools, 54 Dey Street, New York, announces the appointment of E. D. Mitchell as manager of the New York branch in place of W. J. Fuller, who recently resigned. Mr. Mitchell joined the company in January, 1906. He has had a great deal of experience in connection with the export business of the company, having visited the Far East, India and Continental Europe. He is also a director in the Societe Anonyme Alfred Herbert, Paris.

Pickands, Brown & Co., Chicago, announce the resignation of J. A. Galligan, sales agent, and his acceptance of other duties. The sale of coke, heretofore under his direction, has been assumed by R. S. Dutton, manager of sales for all departments. F. L. Schulze has been appointed assistant sales agent for the coke department.

E. Kent Swift, acting treasurer Whitin Machine Works, Whitinsville, Mass., has been elected treasurer of that corporation.

C. W. Burgess, Eastern representative of the National Founders' Association, has been appointed commissioner and secretary of the Canadian Founders' Association, with headquarters at Toronto, Ont., effective on July 1. Mr. Burgess has been with the National Founders' Association in various capacities since 1907, and for the past seven years has been in charge of association affairs in the Eastern territory, with offices at 90 West Street, New York. He will be succeeded by R. A. Riggle, Chicago, who has been a member of the association's field staff for the past 12 years. The Canadian Founders' Association was organized in September, 1919, to promote the open shop principle, foster modern and progressive methods of operation and plant equipment, establish



C. W. BURGESS

fair and equitable relations between employer and employee, and interest its individual members in every proper activity which will contribute to the welfare of the industry as a whole. The association's present elective officers are: President, Melville P. White, Canadian Allis-Chalmers Co., Toronto, Ont.; first vice-president, C. F. Wheaton, Dodge Mfg. Co., Toronto, Ont.; second vice-president, J. M. Taylor, Taylor-Forbes Co., Ltd., Guelph, Ont.; executive committee, P. P. Westby, William Hamilton Co., Peterboro, Ont.; W. E. Blandford, the Brown, Boggs Co., Ltd., Hamilton, Ont.; James McKittrick, Toronto Furnace & Crematory Co., Toronto, Ont.

B. V. E. Nordberg, son of the pioneer engine and hoist builder, B. V. Nordberg, has been appointed sales manager of the Nordberg Mfg. Co., Milwaukee. H. W. Dow, former sales manager, recently resigned to become vice-president and engineer of the Forest Products Chemical Co., Memphis, Tenn.

The Argos Steel Products Corporation, exporter, 170 Broadway, New York, has increased its personnel by the addition of five new men. In the future Daniel C. Quinn, formerly of the Steel Producers Export Co., will be foreign sales manager; W. B. Webb, of the Consolidated Steel Export Corporation, and later of the Liberty Steel Products Co., will be assistant foreign sales manager; Howard R. Baker, until recently with Furukawa & Co., New York, will be in charge of New York city sales; W. L. Buehler, traffic manager, and A. A. Birgel, of the New York Oversea Co., Inc., comptroller.

Thomas S. Gates, Drexel & Co., was made a member of the directorate of the Baldwin Locomotive Works at a meeting of the directors of that company, June 25. He was also made a member of the executive committee to fill the vacancy caused by the death of Arthur E. Newbold. No action was taken on filling the chairmanship of the board, W. L. Austin, the vice-chairman, presiding at the meeting. The following members of the executive committee were appointed as a finance committee: T. S. Gates, chairman; A. V. Sewall and S. F. Tayler.

The board of trustees of the Worcester Polytechnic Institute, Worcester, Mass., recently was reorganized,

increasing the number from 15 to 30, in accordance with a bill recently passed by the Massachusetts legislature, effective July 1. Among the 30 trustees are: Clinton S. Marshall, district manager, American Steel & Wire Co., Worcester; Charles A. Booth, vice-president and sales manager, Buffalo Forge Co., Buffalo; Paul B. Morgan, president, Morgan Construction Co., Worcester; Charles L. Allen, president, Norton Co., Worcester; Harry P. Davis, vice-president, Westinghouse Electric & Mfg. Co., Pittsburgh, and Henry J. Fuller, president, Canadian Fairbanks Co., and vice-president, Fairbanks-Morse Co., New York.

J. W. De Haas, director Dutch East Indian division, American Steel Export Co., New York, has left on a year's trip to the Dutch East Indies, Straits Settlements, Federated Malay States, Siam, Indo-China and Burma, in the interest of his company and to develop the trade of these territories in American steel products.

W. A. Erickson, senior demonstrator for the Heald Machine Co., Worcester, Mass., for 11 years, has taken the place of R. R. Hoefer, assistant branch manager at the New York office of the same company.

Warren B. Lewis has been elected president of the Providence Engineering Society, Providence, R. I.

Thomas A. Kennedy, foundry superintendent, and for many years identified with the field force of the National Founders' Association, has been appointed assistant commissioner of the Canadian Founders' Association, Toronto, Ont., in charge of the Bureau on Foundry Methods and Equipment.

Charles Tinker, who has been in the New York office, Republic Iron & Steel Co., for several years, has been made New England representative with headquarters in Boston, succeeding W. H. Hunter, resigned.

Wilfred Brodeur has been made shop superintendent of the Heald Machine Co., Worcester, Mass., grinding machines, to succeed Harry Smith, resigned.

The Order of Meiji, fourth class, has been conferred upon Charles M. Muchnic, vice-president American Locomotive Sales Corporation, 30 Church Street, New York, by the Emperor of Japan. The decoration, which carries with it the right to wear the insignia of the Imperial Order of the Rising Sun, was presented to Mr. Muchnic by the Imperial Japanese Embassy, Washington.

Col. H. P. Bope, formerly general manager of sales of the Carnegie Steel Co., Pittsburgh; Lester P. Lane, in the steel business since 1906 with the Pennsylvania, Bethlehem and other companies in New York, and Harold S. Bope have formed the Bope-Lane Steel Corporation, which has taken over the Steel & Iron Commerce Co., 120 Liberty Street, New York, established some months ago by Mr. Lane. The company will deal in iron and steel products. H. P. Bope is president, Mr. Lane is vice-president and Harold S. Bope, a mechanical engineer graduated from Cornell University, who was assistant manager of the Detroit office of the Carnegie Steel Co. and later commissioned major in the Ordnance Department, U. S. A., is secretary-treasurer. J. Eugene Norman, at one time with the Pennsylvania Steel Co. and recently with Igoe Brothers, Brooklyn, has joined the selling staff of the company.

W. H. Van Vleck, for several years manager of the Boston office of the Alan Wood Iron & Steel Co., Philadelphia, has been appointed manager of the New York office, succeeding L. G. W. Carpenter, who recently was appointed New York district sales manager of the Penn Seaboard Steel Corporation and the Tacony Steel Co., Philadelphia. Mr. Van Vleck will be succeeded at Boston by Arthur G. Beal, who has had several years' experience in steel distribution in New England.

C. R. Robinson, vice-president in charge of sales, Lackawanna Steel Co., Buffalo, is recovering from pneumonia and will leave shortly for an extended vacation to recuperate.

## OBITUARY

KENNETH WILLIAM BLACKWELL, vice-president Canadian Steel Foundries, Ltd., died after a brief illness at his residence, 103 Crescent Street, Montreal, Que. He was the son of the late Thomas E. Blackwell, and was born in Devizes, Wiltshire, Eng., nearly 70 years ago. He came to Canada when a youth with his father, who was the first general manager of the Grand Trunk Railway. He was educated at the Bishop's College School, Lennoxville, Que., and was apprenticed as a mechanical engineer in the Grand Trunk Railway shops at Point St. Charles, Que. He was later appointed mechanical superintendent of the Grand Trunk for the division between Montreal and Toronto with headquarters at Belleville, Ont. Subsequently he became mechanical engineer of the Chicago and Grand Trunk Railway and later joined the Canadian Pacific Railway as mechanical superintendent. In 1882 he went into the manufacturing business under the name of K. W. Blackwell, manufacturing railroad car springs, etc. This business later became a joint stock company of which Mr. Blackwell was president and still later the company became the Montreal Steel Works, Ltd., with Mr. Blackwell as president and managing director. That company was later absorbed by the Canadian Car & Foundry Co., under the name of the Canadian Steel Foundries, Ltd., Mr. Blackwell being vice-president until his death.

DAVID SKAATS FOSTER, head of the hardware firm of David S. Foster, Sons & Co., Utica, N. Y., died June 23, at his home in Syracuse, N. Y., where he had lived for the past 10 years. He was born in Utica on Jan. 25, 1852, a son of the late Thomas Foster, the founder of the present company. After the father's death in 1893 the other sons, Thomas L. and Abbott Foster, retired and left the business to David Foster. The latter continued alone until 1905 when he admitted his sons, Gerard S. and Bernard D. Foster, the late John F. Shanley and Burt A. Rogers. Mr. Foster had a national reputation as an author of fiction, articles on economics and politics, and poems. During the administration of Governor Hughes he was appointed a member of the New York State Waterways Commission at a time when the barge canal was under construction.

J. C. MALONEY, long identified with the steel industry and who developed and patented several improvements in wire nail machinery, died at the Mercy Hospital, Pittsburgh, June 22, following a brief illness. He was born in Darlington, Pa., June 18, 1855. His first connection with the steel industry was in the late 70's, when he entered the plant of the Carnegie-Phipps Co., Beaver Falls, Pa., as a laborer. He subsequently became superintendent of the wire nail mill of this plant, resigning later to become general manager of the New Philadelphia Nail Co., New Philadelphia, Ohio. Still later he became general manager and consulting engineer for the Biddle Purchasing Co., Pittsburgh. For the past 15 years he had conducted a brokerage business in wire nail machinery and supplies. Since 1905 he had made his home in Swissvale, Pa.

THOMAS HOWARD SPEEDY, president T. H. Speddy & Co., manufacturers' sales agents of steel and wire products, 85 Second Street, San Francisco, died June 13, aged 72 years. His active business career was continuous from 1866 to 1916, at which time he practically retired. After 25 years of service with the Geo. Worthington Co. and Morley Bros., he established his company in 1891. He was a pioneer in the agency business on the Pacific Coast.

EDWARD WYLDE, president Elevator Supplies Co., Hoboken, N. J., whose residence was at 1 East Fifty-sixth Street, New York, died June 18 at the age of 55. He was born in England and came to this country as a youth, settling in Chicago, where 30 years ago, he

founded the Elevator Supply & Repair Co. He belonged to the Engineers' Club, New York.

LOUIS L. BRINSMANDE, formerly manager of the Westinghouse Machine Co., and previously for 22 years with the Western Electric Co., died June 16 at his residence, 235 West 103d Street, New York, after a brief illness. At the time of his death he was at the head of his own machinery concern. He was born in New York in 1875, and belonged to the Engineers' Club.

LEWIS ALBERT BUTTERFIELD, for 12 years superintendent Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass., died June 20, at the Chapin Memorial Hospital, Springfield, Mass., aged 58 years. Mr. Butterfield was born at Winthrop, Me.

GEORGE KIMES, who had held the position of roll designer at the Crescent works of the Crucible Steel Co. of America, Pittsburgh, for about 35 years, died at his home in Pittsburgh recently.

PHILIP SIDNEY POST, vice-president International Harvester Co., Chicago, died at his home in Winnetka, Ill., on June 27.

CHARLES ETHAN BILLINGS, founder of the Billings & Spencer Co., Hartford, Conn., and chairman of the board, died June 5 in his eighty-fifth year.

ALBERT E. JENKINS, connected for many years with the technical staff of the Grasselli Chemical Co., Cleveland, died of heart disease Tuesday night, June 22.

## Cleveland Iron and Steel Market

(Continued from page 45)

**Old Material.**—Heavy melting steel has become more active and firmer, but there is practically no trading in either grade. A northern Ohio mill is reported to have purchased 2500 tons of heavy melting steel at \$25, and has offered \$25.25 for this grade. With this exception mills are not in the market, but there has been considerable trading between dealers who are paying \$25 to \$25.50 for selected heavy melting steel scrap for delivery to Warren and Youngstown mills and \$26 has been offered for small lots. For Canton delivery, with less exacting specifications, dealers are paying \$24 to \$24.50. Locally the price of heavy melting steel is about \$1 a ton higher, or \$23.75 to \$24.25. However, it is believed that should local mills come to the market they would have to pay \$25 or higher. Shipments are very slow because of the car shortage, amounting to only about one-third in volume of what they were before cars were diverted to the coal trade.

Dealers quote delivered consumers' yards in Cleveland and vicinity as follows:

|  |                    |
|--|--------------------|
| Heavy melting steel.....               | \$23.75 to \$24.25 |
| Steel rails, under 3 ft.....           | 25.00 to 27.75     |
| Steel rails, rerolling.....            | 31.00 to 32.00     |
| Iron rails.....                        | 32.00 to 33.00     |
| Iron car axles.....                    | 41.00 to 42.00     |
| Steel car axles.....                   | 36.00 to 37.00     |
| Low phosph. melting scrap.....         | 26.25 to 26.50     |
| Cast borings.....                      | 15.75 to 16.00     |
| Machine shop turnings.....             | 11.25 to 11.50     |
| Mixed borings and short turnings.....  | 15.25 to 15.50     |
| Short turnings for blast furnaces..... | 15.25 to 15.50     |
| Compressed steel.....                  | 19.75 to 20.00     |
| Railroad wrought.....                  | 28.00 to 29.00     |
| Railroad malleable.....                | 31.00 to 32.00     |
| Steel axle turnings.....               | 19.50 to 20.00     |
| Light bundle sheet scrap.....          | 14.00 to 14.25     |
| Drop forge flashings over 10 in.....   | 14.50 to 15.00     |
| Drop forge flashings under 10 in.....  | 16.50 to 17.00     |
| No. 1 cast.....                        | 41.00 to 42.00     |
| No. 1 busheling.....                   | 18.50 to 18.75     |
| Railroad grate bars.....               | 32.00 to 33.00     |
| Stove plate.....                       | 32.00 to 33.00     |
| Cast iron wheels.....                  | 37.00 to 38.00     |

James F. Donahue, western sales manager Russell, Burdsall & Ward Bolt and Nut Co., at Chicago, has resigned, effective Aug. 1, to become general manager of the Foster Bolt and Nut Co., Cleveland. He will be succeeded in his former position at Chicago by Foster E. Fike, now assistant general manager of the Russell, Burdsall & Ward plant at Rock Falls, Ill.

The Liberty Iron & Metal Co., Newark, N. J., has filed a voluntary petition in bankruptcy. Joseph M. Benisch heads the company.

## WEARY OF STRIKES

### Result of Columbus Conference Awaited With Keen Interest at Youngstown

YOUNGSTOWN, OHIO, June 29.—Interest in the steel industry in the Mahoning and Shenango Valleys centers on the outcome of the conference which opened Monday in Columbus to agree on a wage scale for sheet and tinplate operatives for the ensuing year in mills operating under the agreement with the Amalgamated Association of Iron, Steel and Tin Workers. Failure to reach an agreement will result in a suspension of operations. It is likely the men will continue at work pending the outcome of the conference this week. The principal sheet and tinplate producers in the Mahoning Valley would be seriously affected by a suspension, although it would enable the mills to clear their warehouses of a heavy accumulated tonnage. Sheet makers who operate under the Amalgamated scale in the Valley are the Brier Hill Steel Co., Trumbull Steel Co., Republic Iron & Steel Co., Sharon Steel Co., Falcon Steel Co., and Mahoning Valley Steel Co. Mills of the American Sheet & Tin Plate Co. in the Shenango Valley and of the Youngstown Sheet & Tube Co. at East Youngstown do not recognize the Amalgamated Association and it is unlikely they would be affected. In the case of the bar iron scale, the Youngstown district would not be seriously affected, aside from the plant of the A. M. Byers Co. at Girard, Trumbull county, where the company operates 88 puddling furnaces. At East Chicago, Ill., the Republic Iron & Steel Co. operates a small bar iron works, which would be affected.

If the controversy resolves itself into an issue over the open or the closed shop in the steel industry, it is likely to be long drawn out and costly. Furthermore, a strike at this time would be unpopular and would fail to meet with general support because of the high wages now paid in these branches of the industry and because the public is wearied of labor disorders. Comment in the pro-labor newspapers and other publications advises against a strike.

Under the existing conditions of transportation difficulties and coal and coke shortage, sheet mill operations, which continue at 80 per cent of normal, are as favorable as can be expected. All plants opened the week on this average basis. Last week the Falcon Steel Co., one of the district's new makers, established a record production of 1800 tons of sheets. Its maximum production is 2000 tons, which is not likely to be reached until cooler weather.

In event of disagreement over the wage scale, manufacturers are prepared to close the mills.

As a consequence of the threatened suspension, makers are temporarily out of the market and are entertaining no new business. Their rollings are scheduled for months ahead, and even under normal conditions, the only hope of spot delivery would be on average rollings or occasional rollings to fill gaps in the regular schedules. Output is being allotted to regular consumers on the basis of production.

An accession was made to blast furnace operations during the past week, when the Republic Iron & Steel Co. started No. 5 stack in its Hasletton group, which had been idle since in the spring. Five furnaces in this group are now active. With this addition to the active list there are now only four idle stacks in the Mahoning Valley, out of 25. The Republic company also started its plate mill this week, after a short period of idleness. Blast furnaces which depend on shipments of coke from other sections are operating intermittently due to interference with transportation.

Operation of units producing semi-finished material, such as billets, slabs and bars would be affected by a shutdown of sheet mills. Sheet makers who are self-contained would be enabled to produce slabs and bars for the market, if the suspension lasts for an extended period. A sale of open-hearth sheet bars at \$75 is reported.

In addition to their complaints about the inadequacy of box cars, manufacturers say many of such

cars received from the railroads for shipment of sheets and tinplate are in need of repairs. The producers have no choice but to accept the cars and make what repairs are necessary.

Ore shipments continue inadequate and the outlook for a full supply for the year is doubtful in view of the car shortage.

The Struthers Furnace Co., Cleveland, has placed an order with the Pressed Steel Car Co. for 106 hopper cars of 55-ton capacity, to haul fuel to the company's stack in Struthers, Mahoning county, from the Connellsville regions. The first of the cars are to be delivered about Aug. 1.

### Industrial Problems Discussed

Robert E. Newcomb, Deane Steam Pump Co., Worthington Pump & Machinery Corporation, Holyoke, Mass., gave an illustrated address on Industrial Soviet vs. Industrial Family before the Employers' Association of Massachusetts at Hotel Vendome, Boston, June 24. Mr. Newcomb's address was along lines similar to one made at the annual convention of the National Metal Trades Association, New York, last April. With the aid of pictures, he showed that employees at his plant, who are unorganized, are contented with industrial conditions there and satisfied the company is giving them a square deal. That Mr. Newcomb's contentions are correct is shown by the fact that the machinists' union is and for some weeks has been unsuccessfully endeavoring to unionize the Deane Steam Pump Co. employees. Efforts to unionize the Worthington Pump & Machinery Corporation's Cambridge, Mass., plant also have been unsuccessful.

Askey Day Leavitt, D.D., gave a forceful and dramatic address on Americanism. Dr. Leavitt is in a position to view the labor situation from all standpoints, 20 years or so ago having been employed as a carpenter during the construction of Hotel Somerset, Boston. He believes that much of our present labor unrest is due to the sense of class distinction having been exaggerated, that when men come face to face they soon discover they are human beings, and if they are the right kind of men soon find a common ground. He has little use for the third party that keeps man from meeting man. Dr. Leavitt says it is the small groups, the minorities, that are the chief offenders today, and that he is ashamed to admit he is one of that great body of Americans, the majority, which for some reason is disinclined or cannot express publicly what the majority wants. Speaking of the labor unrest, he said: "When the workman asks for higher wages, shorter hours and less work, he thinks these are what he wants. But he really does not know what he does want. What he really wants is social status. The third party, however, because it is the third party's business, continues to make the workman think he wants something he really does not want."

George W. Solley gave an interesting outline of what the Loyal Coalition stands for, what it is trying to do, and what it hopes to accomplish. The Loyal Coalition is three months old, and its headquarters are at 24 Mt. Vernon Street, Boston.

The Employers' Association of Eastern Massachusetts has 132 members, as compared with 46 a year ago.

### Pickets Limited

An order limiting the number of pickets that the striking machinists may place at the plant of the United States Motor Truck Co., Covington, Ky., was issued on June 25 by Federal Judge A. M. Cochran. By the terms of the order, only four pickets may be stationed at the plant, and their names must be supplied to the court. The plant, on the other hand, is required to maintain only one entrance for its employees. This order was issued in connection with the issuance of a temporary injunction sought to prevent picketing of this plant. In the course of the hearing, Judge Cochran declared that a laboring man has a right to persuade a fellow employee, but he cannot go beyond the words of peaceful persuasion. "I have the right to decline to talk to another man if I don't want

to. No one has a right to resort to insult or other measures to make me talk. A laboring man can request the other man for an interview. He has a right to use all his persuasive powers. He has no right to threaten or apply epithets. That's force."

A similar decision was laid down by Judge Hickenlooper of Cincinnati in several motions for a temporary injunction restraining striking machinists from interfering with employees of various metal working plants in that city.

#### In the World of Labor

The strike at the American Wringer Co., Woonsocket, R. I., in progress for three weeks, is over, the employees accepting the company's offer of an increase of 3c. per hour, plus a bonus which the operators at first refused.

The General Electric Co., West Lynn, Mass., plant is operating notwithstanding threats of a general walk-out. There has been a series of conferences between the superintendent and employees' representatives regarding grievances, but no public statement regarding the outcome has been made. The fact that the plant is operating is significant.

Since the fatal clash June 21 between strikers, a company of city guard troops and the police force, the situation at Waterbury, Conn., has quieted down. When the employees went on strike several weeks ago a very large part of them were unorganized. Union officials and radical leaders soon made their appearance upon the ground and since their arrival the most serious disorders have taken place. Machine guns now play a prominent part in preserving order.

Walter Gordon Merritt, associate counsel of the League of Industrial Rights, New York, speaking before employers and employees of Cincinnati industries, warned of the difficulties which would beset the nation should employer and employee fail to come to a definite understanding. As a remedy for present labor difficulties, Mr. Merritt advocated the installation of relations departments in institutions and workshops and the formation of shop committees and councils, whereby a constitution could be arranged to deal with the employer and employee alike.

All activities of the National Committee of the American Federation of Labor for organizing iron and steel workers will cease in a short time in the Youngstown district. Since the strike last fall the committee has maintained a branch office at Youngstown, but its operations have been of a negligible character.

#### Service Car Shortage

UNIONTOWN, PA., June 29.—While \$17 ovens may be given as the maximum price for prompt delivery of furnace coke, there have been only isolated sales at this figure. The market ranges down to \$15 with the generally accepted market price of the end of this week \$16. It is considered almost certain, however, that the new Interstate Commerce Commission ruling will result in the price of coke going to \$17 or higher this week.

During the early part of last week, car supply was unusually good, but this situation was reversed for the last half both for coal and coke. The embargoes in the East, including shipments at piers, have resulted in a number of shipments being held up for reconsignment, and the car supply problem for the next week promises to be acute.

The order of the Interstate Commerce Commission that all coal cars be returned to that industry, is offering a serious problem in the Connellsville field, which is essentially a coke producing region.

Stockholders of the Slick-Knox Steel Co. have approved a change in name to the Sharon Pressed Steel Co. and removal of the general offices from Pittsburgh to Wheatland, Pa., where the plant is located. The company is installing a large amount of new machinery. It is capitalized at \$6,000,000.

#### PITTSBURGH FOUNDRYMEN

##### Address by George D. McIlvain—Field Sports and Election of Officers

Deploring the attitude of legislative bodies, both State and Federal, toward business and uttering a strong plea for a more liberal interpretation of the Sherman anti-trust law, George D. McIlvain, secretary of the National Pipe and Supplies Association, who was the speaker at the annual outing and ladies' day of the Pittsburgh Foundrymen's Association, held at The Pines, Monday afternoon and evening, June 21, declared that so long as co-operative effort in industry was circumscribed by adverse legislation and unfavorable court decisions, the business of the country must be conducted under conditions little better than those of ruthless competition.

Mr. McIlvain's subject was "Co-operation," and he traced in interesting fashion the development of the co-operative movement among manufacturers. He said that prior to the war the industries of the country were practically unorganized. The war gave impetus to organization and under the direction of the Chamber of Commerce of the United States no less than 400 industries became organized and the co-operative effort not only contributed materially to the winning of the war but was the marvel of the entire world.

The speaker drew a comparison between the interpretation of anti-trust laws in England and Australia and in this country to the disadvantage of the domestic court decisions. He drew attention to the law recently passed by Congress permitting agricultural interests to combine for marketing farm products, which he stated was class legislation. He said the Federal Trade Commission was not functioning as it was intended to in the original suggestion of the president and that instead of being able to advise business in a manner that would enable it to pursue a thoroughly legal course, it has developed into a purely inquisitorial body. He recommended a commission patterned after the Canadian Board of Commerce, which has the power to advise and direct business men in the Dominion.

Field sports took up the afternoon and were in charge of a committee comprising O. C. Dobson of the Carborundum Co., G. A. Bauman of the Jones & Laughlin Steel Co., C. L. Kirk of the Kirk Supply Co. and L. W. Mesta of the Mesta Machine Co. In the absence of A. M. Fulton, president of the association, A. J. Hartmen acted as toastmaster and in addition to Mr. McIlvain introduced A. O. Backert, general manager of the Penton Publishing Co., and Carleton Koch, president of the American Foundrymen's Association, who spoke briefly.

Officers of the association for the coming year, installed at the meeting, are: President, A. J. Hartmen, United Engineering & Foundry Co.; vice-president, F. H. Clay, Allegheny Steel Co.; treasurer, William J. Brant; secretary, Bayard Phillips, Phillips & McLaren Co.; executive committee, A. M. Fulton, John Field, Union Steel Casting Co.; John W. Guay, Fort Pitt Steel Casting Co.; J. S. McCormick, J. S. McCormick Co., and H. P. Spilker, Sterret-Thomas Foundry Co.; foundry fund trustees, William J. Brant, Charles H. Gale and J. Lloyd Uhler.

The Cincinnati Chapter of the American Steel Treaters' Society, at its meeting on June 25, elected the following officers: Chairman, W. A. Spear, of the Cincinnati Milling Machine Co.; vice-chairman, R. M. Taylor, American Tool Works; secretary-treasurer, Fred L. Martin. After the meeting the members of the chapter made an inspection trip to the plant of the Andrews Steel Co., Newport, Ky.

Captain Conway of the Cincinnati Fire Department, in making plans to reduce fire risks and industrial accidents, plans to enroll every factory superintendent and foreman in the city into a unit which he describes as the greatest "safety first machine" in the world. A field day for factory executives will be held on July 14.

## Important Labor Conference at Columbus

(Continued from page 11)

agreement by which they sanction a further extension of the Amalgamated Association's influence to other departments. Fundamental issues are involved in the controversy over the somewhat innocently appearing memorandum of agreement.

There are 20 companies represented in the National Association of Sheet and Tin Plate Manufacturers and 24 in the Western Bar Iron Association. At the Atlantic City gathering there were 30 representatives of manufacturers in attendance and 17 of the Amalgamated, including three officers and 14 delegates from the various constituent lodges. President M. F. Tighe presided at the sessions.

## Large Increase in British Foreign Steel Trade in May

British steel exports in May this year, excluding iron ore and including scrap, were 332,869 gross tons which compare with 274,337 tons in April and 262,676 tons per month in the first quarter. The May figures exceed the outgo for any month in 1917, 1918 or 1919 or any month thus far this year. The May exports in 1919 were 208,804 tons. The present rate, as judged by May data, is about 90,000 tons below that of 1913, the record year.

Iron and steel imports in May this year were 83,431 tons as against 71,161 tons in April and an average of 75,504 tons per month for the first quarter. The May imports were exceeded only once in 1919, when they were 87,892 tons in October. In May, 1919, the imports were only 35,276 tons.

The following summary gives the relative exports and imports of the first quarter and for April and May, 1919 and 1920, and the average per month for 1913 and 1919 in gross tons:

|                                  | Exports | Imports |
|----------------------------------|---------|---------|
| Average first quarter, 1919..... | 147,228 | 44,713  |
| April, 1919.....                 | 174,219 | 15,598  |
| May, 1919.....                   | 208,804 | 35,276  |
| Average first quarter, 1920..... | 262,676 | 74,504  |
| April, 1920.....                 | 274,337 | 71,161  |
| May, 1920.....                   | 332,869 | 83,431  |
| Average per month, 1913.....     | 420,757 | 195,264 |
| Average per month, 1919.....     | 204,516 | 51,557  |

The trend of some of the principal exports is shown by the following data in gross tons:

|                        | Av. Per Month, 1913 | Av. Per Month, 1919 | May, 1919 | May, 1920 |
|------------------------|---------------------|---------------------|-----------|-----------|
| Pig iron.....          | 78,771              | 21,503              | 20,639    | 51,633    |
| Steel rails.....       | 41,676              | 10,435              | 22,888    | 11,088    |
| Steel plates.....      | 11,162              | 19,996              | 26,744    | 19,621    |
| Steel bars.....        | 20,921              | 20,787              | 29,873    | 36,898    |
| Galvanized sheets..... | 63,506              | 15,508              | 13,984    | 41,761    |
| Tin plates.....        | 41,208              | 24,147              | 14,041    | 36,480    |
| Black sheets.....      | 5,679               | 11,109              | 8,960     | 19,266    |

The principal export gains in April, 1920, over April, 1919, and the 1919 monthly average have been in pig iron, steel bars, galvanized and black sheets, and tin plates. Pig-iron imports in May were 19,190 tons against 11,216 tons in April, 17,620 in March, 15,500 in February, this year, and 7452 tons in May, 1919. The average per month in 1919 was 13,623 tons and in 1913 it was 18,059 tons per month.

Iron ore imports in May, this year, were 710,592 tons, bringing the total to June to 2,784,329 tons as compared with 2,151,574 tons to June, 1919.

Manganese ore imports in May, 1920, were 30,899 tons. These compare with 47,467 tons in May, 1919, and with 50,098 tons per month in all of 1913. The total for the first five months of this year has been 140,381 tons against 179,221 tons to June 1, 1919. The average per month in 1919 was 22,150 tons.

### Contract With Brazilian Company

WASHINGTON, June 29.—Assistant Trade Commissioner R. M. Connell has reported to the Bureau of Foreign and Domestic Commerce that a contract signed recently with the Itabira Iron Ore Co., Ltd., by the Minister of Communications and Public Works in Brazil authorizes that company to construct and ex-

The agreement between bar iron manufacturers and their employees through the Amalgamated Association provides that, in event of failure to reach a decision on a new contract at the expiration of the old one, the men shall continue at work until August 1, following expiration of the contract. It is also understood that this time limit may be extended by mutual agreement. Terms of any new contract entered into subsequently shall be retroactive to July 1.

There is no arrangement, however, in the contract between the Amalgamated and sheet and tinplate mills for a continuance of operations after expiration of the old agreement, unless a new one is entered into. It is hoped that if a new wage scale is determined upon, the men will continue at work under this scale until other questions involved in the agreement are settled.

ploit, without monopoly, high temperature furnaces, a steel plant and reducing apparatus, as well as two railroad lines, which, leaving respectively from the mines of Itabira do Matto Dentro, State of Minas Geraes, and from the port of Santa Cruz, State of Espirito Santo, connect with a track of the Victoria to Minas Railway. Moreover, the Government permits the company to erect a dock on the margin of the river Piraque-Assu, in Santa Cruz, with the necessary installations for loading and unloading of minerals. The new contract calls for a minimum production of 150,000 tons yearly, of square bars, round bars, plates, beams, rails and iron of different sections.

### French Iron and Steel Output in 1919

The French steel output in 1919, according to data issued by the Comité des Forges de France, was 2,186,260 metric tons, of which 2,126,735 tons was ingots and 59,525 tons castings. This equals 46.6 per cent of the average pre-war output, the production in 1913 having been 4,686,866 tons. Throughout 1919 production was severely hampered by the lack of fuel and by the crisis in railroad transportation. The output according to grades was as follows, in metric tons:

|                     | Ingots    | Castings |
|---------------------|-----------|----------|
| Basic Bessemer..... | 1,012,542 | 374      |
| Acid Bessemer.....  | 29,678    | 19,004   |
| Open hearth.....    | 1,038,825 | 31,341   |
| Crucible.....       | 15,931    | 1,006    |
| Electric.....       | 34,759    | 7,800    |
| Total.....          | 2,126,735 | 59,525   |

Of the total Alsace-Lorraine is credited with 858,526 tons or 40.2 per cent. The 1919 production compares with the following data by years:

|           | Tons      | Tons      |
|-----------|-----------|-----------|
| 1913..... | 4,686,866 | 2,231,651 |
| 1914..... | 2,655,854 | 1,807,931 |
| 1915..... | 1,087,700 | 2,186,260 |
| 1916..... | 1,951,892 |           |

The production of semi-finished steel, blooms, billets and sheet bars, in 1919 amounted to 1,475,647 tons, of which 1,286,257 tons was consumed in the producing works and 189,390 tons delivered to other buyers. Of this total Alsace-Lorraine is credited with 783,390 tons or 53 per cent.

The output of finished products is shown in the following table:

|                              | Tons    | Tons                      |
|------------------------------|---------|---------------------------|
| Rails.....                   | 131,787 | 19,435                    |
| Sleepers, fish plates.....   | 15,509  | 93,995                    |
| Tires.....                   | 23,102  | 16,395                    |
| Springs.....                 | 10,151  | 7,323                     |
| Beams, other sections.....   | 204,809 | 34,262                    |
| Merchant steel and bars..... | 538,386 | 44,898                    |
| Sheets.....                  | 215,971 | Non-enumerated..... 5,349 |
| Plates.....                  | 25,805  | Total..... 1,387,177      |

Of this total Alsace-Lorraine produced 431,457 tons or over 30 per cent.

The pig iron output in 1919 is returned as 2,412,149 tons, of which 55,422 tons was produced in electric furnaces. The production of the last seven years was as follows:

|           | Tons      | Tons                |
|-----------|-----------|---------------------|
| 1913..... | 5,207,307 | 1917..... 1,734,967 |
| 1914..... | 2,690,546 | 1918..... 1,306,494 |
| 1915..... | 585,776   | 1919..... 2,412,149 |
| 1916..... | 1,488,691 |                     |

Of the 1919 pig iron output Alsace-Lorraine contributed 1,112,443 tons or 46.1 per cent.

## Philadelphia Iron and Steel Market

(Continued from page 45)

whenever it is offered. An Eastern furnace has had no difficulty in getting \$50, furnace, for iron analyzing 2.75 to 3.25 per cent silicon. Some Buffalo iron is coming into this market, through the fact that the furnaces in that district are able to ship in coal cars, which are being returned to the Pennsylvania mines. A few consumers have therefore gotten more iron than they require, while others, due to the general railroad tie-up, are suffering an acute shortage. Eastern blast furnaces are short of coke and a number are banked, including four or five of the Bethlehem Steel Co. stacks, two of the Reading Iron Co. and one of the Eastern Steel Co. The Robesonia furnace will be banked Thursday and the Brooke furnace will go out within a week for relining. Other furnaces are likely to be banked at any time if the coke shortage becomes more serious.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

|   |                    |
|---|--------------------|
| East. Pa., No. 2 plain, 1.75 to 2.25 sil. | \$45.90 to \$48.10 |
| East. Pa., No. 2 X, 2.25 to 2.75 sil.     | 47.15 to 49.35     |
| Virginia No. 2 plain, 1.75 to 2.25 sil.   | 48.10 to 49.10     |
| Virginia No. 2 X, 2.25 to 2.75 sil.       | 49.35 to 50.35     |
| Basic deliv. eastern Pa.                  | 44.10 to 44.80     |
| Gray forge                                | 43.00 to 44.00     |
| Standard low phos. (f.o.b. furnace)       | 54.00              |
| Malleable                                 | 48.10 to 48.60     |
| Copper bearing low phos. (f.o.b. furnace) | 50.00              |

**Coke.**—The coke market is in a startling condition owing to the scarcity of coke cars and the large demand for spot coke from blast furnaces, which will pay almost any price to avoid banking. To-day a furnace operator paid \$18 a ton, Connellsburg, with \$5 freight rate, for 10 carloads and was endeavoring to buy more even at this high price. Foundry coke has been sold for prompt shipment at prices varying from \$15.50 to \$18, Connellsburg.

**Semi-Finished Steel.**—A Western Pennsylvania steel maker is now offering sheet bars for prompt shipment. It is rolling these bars on a rail mill. The sheet bar market is not so strong as it was several weeks ago, and a sale of 1000 tons is noted at around \$70, Pittsburgh. An Eastern steel company sold various lots of forging billets last week, aggregating 6000 tons, at \$70 and \$75, Pittsburgh, and 1200 tons of open-hearth rebar billets at \$60 and \$65, Pittsburgh.

**Plates.**—The demand for plates is light. One company reports that it has not received an inquiry in the last 30 days for more than 1000 tons, while most of its inquiries have averaged from 100 to 500 tons. Prices continue rather soft, 3.50c., Pittsburgh, now being quite generally quoted on tank steel, while the top of the market seems to be 3.75c., Pittsburgh, the latter price applying usually to specification plates. One tonnage of tank steel in very desirable sizes is reported to have been taken by a mill at 3.25c., Pittsburgh. Plate mills, in common with all other industries, are seriously handicapped in operating on account of the railroad situation. One plant may be wholly or partially shut down within the next week unless conditions show substantial improvement. We quote sheared plates,  $\frac{1}{4}$  in. and heavier, at 3.50c. to 3.75c., Pittsburgh, plus a freight rate of 25c. per 100 lb. to Philadelphia.

**Structural Material.**—While the independent makers of shapes are generally quoting 3.25c., Pittsburgh, or higher, it is reported, but not confirmed, that in one instance 3c., Pittsburgh, has been accepted. The market is not active, but with present operating difficulties, mills are having about all they can do to take care of specifications on old orders. The State of Pennsylvania office building at Harrisburg, Pa., requiring 3000 tons of steel, is reported to have been let to an independent fabricator. The Norfolk & Western Railroad is in the market for 750 tons of bulb tees. The Pennsylvania Railroad is inquiring for steel for a few bridges, and while the total amount of steel required is only a few hundred tons, the inquiry is significant, as it is about the first railroad bridge work that has come into the market since the end of the war. We quote plain material at 3.25c., Pittsburgh.

**Bars.**—The demand for bars continues as the most active feature of the steel market. Steel mills could

probably sell many times the quantity of bars they have available for delivery over the next few months. One company, which has taken no business for some time at less than 4c., Pittsburgh, is filled up for four months, and asserts it could sell out for the remainder of the year at this price. The Pennsylvania Railroad is expected to close this week on upwards of 3000 tons of bars. A Pittsburgh producer is reported to have quoted 3.10c., Pittsburgh, while some of the Eastern mills quoted 3.75c. and 4c., Pittsburgh, on this inquiry. A sale of 1000 tons of bars to a consumer in the Cleveland district has been made by an Eastern mill at 4c., Pittsburgh, and 500 tons of bands has been sold to a Detroit consumer at 5.50c., Pittsburgh. Bar iron demand is good, the recent advance to 4.50c., base, Pittsburgh, now being generally effective.

**Sheets.**—Consumers of sheets are pressing for deliveries in anticipation of a possible strike of sheet and tin mill workers on July 1. It is not considered likely that such a strike, if it occurs, will be of long duration as it would have serious consequences for several essential industries, including the food industry and the coal mines. A meeting of the National Association of Sheet and Tin Plate Manufacturers is scheduled for July 8. Prices of independent makers of sheets are without change.

**Rails.**—A Philadelphia exporter has inquired for 1800 tons of 35 and 60 lb. rails for shipment to the Philippines.

**Old Material.**—The only feature in the local scrap market is the enormous demand for melting steel from England. In the last two weeks about 150,000 tons have been sold for shipment to steel plants in that country at \$25, seaboard, and higher. Exporters who have taken these orders are offering above the domestic market price for strictly high grade steel. Domestic sales on old orders are being made at \$22.50, delivered eastern Pennsylvania. We quote for delivery at consuming points in this district as follows:

|  |                    |
|--|--------------------|
| No. 1 heavy melting steel  | \$22.50 to \$23.00 |
| Steel rails rerolling  | 32.00 to 33.00     |
| No. 1 low phos. heavy 0.04 and under                             | 30.00 to 31.00     |
| Car wheels   | 38.00 to 40.00     |
| No. 1 railroad wrought   | 33.00 to 34.00     |
| No. 1 yard wrought   | 26.00 to 27.00     |
| No. 1 forge fire   | 17.50 to 18.00     |
| Bundled skeleton   | 17.50 to 18.00     |
| No. 1 busheling  | 20.00 to 21.00     |
| No. 2 busheling  | 17.00 to 18.00     |
| Turnings (short shoveling grade for blast furnace use)           | 17.00 to 18.00     |
| Mixed borings and turnings (for blast furnace use)               | 16.50 to 17.50     |
| Machine-shop turnings (for rolling mill and steel works use)     | 18.50 to 19.00     |
| Heavy axle turnings (or equivalent)                              | 20.00 to 20.50     |
| Cast borings (for rolling mills)                                 | 20.00 to 21.00     |
| Cast borings (for chemical plants)                               | 21.50 to 22.50     |
| No. 1 cast   | 37.00 to 38.00     |
| Railroad grate bars  | 31.00 to 33.00     |
| Stove plate (for steel plant use)                                | 27.50 to 28.50     |
| Railroad malleable   | 28.00 to 29.00     |
| Wrought iron and soft steel pipes and tubes (new specifications) | 22.00 to 23.00     |
| Iron car axles   | 45.00 to 46.00     |
| Steel car axles  | 42.00 to 44.00     |

## Hopeful Feeling Prevails at Columbus

**YOUNGSTOWN.** June 30 (By wire).—President M. F. Tighe of the Amalgamated Association of Iron, Steel and Tin Workers has notified each of the local lodges of the association to continue at work pending further negotiations on the wage scale. Considerable progress was made yesterday in reaching an agreement both as to wages and the question of policy of the Amalgamated Association as embodied in a memorandum of agreement. The conference was resumed this morning with a distinctly hopeful feeling that an agreement will soon be reached.

## Morgan Engineering Co. Buys Ordnance Plant

The Morgan Engineering Co., Alliance, Ohio, has purchased the United States ordnance plant in Alliance, built in 1917 at a cost of about \$6,000,000, including the equipment, and operated by the Morgan company until the completion of its war contracts.

# Machinery Markets and News of the Works

## MORE ACTIVITY

### Mixed Conditions of Price Advances and Cuts

#### Labor Situation Clearing in Cincinnati—Cancellations More Common, But Not Alarming

More encouraging conditions are reported from some tool centers, with railroad buying the backbone of business. The Norfolk & Western Railroad is closing on a large list. The Union Pacific and the Canadian Pacific railroads were also recent purchasers. The Chicago, Rock Island & Pacific has been buying against a list calling for a total outlay of about \$250,000. The New York Central will soon issue a series of lists.

Those who are awaiting lower prices find encouragement in such reports as come this week from New England where a milling machine representative offered to cut. Others have been willing to mark down

where competition is keen. However, the lathe market is free from concessions. On the other hand, advances are still announced, as that of a line of bolt, nut, grinding and polishing machines, raised 20 per cent.

In Cincinnati, workmen, who had been out since early May, returned to several shops until from 25 to 50 per cent of the normal force is on duty. In the same center, some shops will reduce their forces about July 1 because they are caught up with orders. In two centers, crane business is more active. Reports of deferred buying and cancellations still persist. Dealers who hoped to buy second-hand machines from the Hog Island shipyard have been informed that they are for sale only with the entire plant.

Among the larger sales are: The entire list of tool room equipment to the Mead-Morrison Mfg. Co., East Boston; tools for shipment to Havana for the Republic Glass Co. Important inquiries are from: The Ajax Forge Co., Chicago, for hammers, cranes, etc.; the Providence Engineering Co., Providence, for two tentative lists; the Braddock Nail & Mfg. Co., Everett, Mass.

## New York

NEW YORK, June 28.

A certain degree of improvement in the machine tool business has resulted from recent inquiry and buying by the railroads, when other lines of industry using machine tools are not only refraining from buying but are actually canceling orders. The Norfolk & Western Railroad is now closing on its list issued several weeks ago. The New York Central is about to send out a series of lists, one of which is for about 30 tools, chiefly lathes. This railroad is now inquiring for a cold saw, two turret lathes and one link grinder for its West Albany shop.

Many tools have been sold for export. One large New York house has practically closed for a large shipment of tools to Brazil. Inquiries have been pending of late from three railroads and one industrial plant in that country, the list for the latter asking for equipment valued at about \$175,000. Recent sales to Switzerland include three boring mills and a turret lathe.

Because of the distant deliveries of new tools there is an especial demand for second-hand machines. Several dealers recently went to Hog Island, Philadelphia, on the report that the machinery there was to be sold. However, according to the latest ruling, the machinery will be sold only with the entire plant.

The Worthington Pump & Machinery Corporation recently bought several machines.

Contrary to the experience of the majority, a New York representative of a milling machine manufacturer claims better business for the past three weeks than for any similar period in many months.

The crane market remains quiet with numerous cranes under consideration by purchasers and few sales. Several of the cranes awarded to the Niles-Bement-Pond Co. and one to the Morgan Engineering Co. by the Baldwin Locomotive Works have been withdrawn temporarily. An inquiry is in the market from Garcia & Diaz, exporters, 59 Pearl Street, for a gantry crane for export to Spain.

Among recent sales are: Gilbert Grant Co., South Plainfield, N. J., a 5-ton, 24-ft. span overhead traveling crane to the O'Neill Iron Works, Buffalo, N. Y.; the Bedford Foundry & Machine Co., a 30-ton, 42-ft. span overhead traveling crane to the Kennedy-Van Saun Mfg. & Engineering Corporation, 120 Broadway, New York; the Ohio Locomotive Crane Co., a 30-ton, 75-ft. boom, 8-wheel locomotive crane to the Sugar Factories Construction Co., 165 Broadway, New York; the Industrial Works, a 12½-ton, 40-ft. boom locomotive crane to the American Car & Foundry Co.; Niles-Bement-Pond Co., four 5-ton overhead traveling cranes to the Michigan Brass & Copper Co., Detroit, Mich.; one 15-ton overhead traveling crane to the Eastman Kodak Co., Rochester, N. Y., and one 10-ton overhead traveling crane to the Central of Georgia Railroad; the Shepard Electric Crane & Hoist Co., a 1-ton

single I beam crane to the Hazzard Mfg. Co., Wilkes-Barre, Pa., and a 5-ton, 24-ft. span overhead traveling crane to the Palmer Foundry & Machine Co., Palmer, Mass.

The Axle Lock Corporation, New York, has been incorporated with a capital stock of \$80,000 by A. and J. Liebmann and W. P. Gahagan, 231 Lincoln Place, Brooklyn, to manufacture special locking devices for automobile service.

The Majestic Machine & Tool Co., 178 Centre Street, New York, has increased its capital stock to \$60,000.

The J. Klein Iron Works, 65 Broadway, Long Island City, N. Y., is having plans prepared for a two-story plant on property recently acquired at Vernon and Webster avenues, to cost about \$50,000.

The Pressed Steel Auto Parts Corporation, New York, has been incorporated with a capital of \$150,000 by H. C. Hand and S. B. Howard, 65 Cedar Street, to manufacture automobile parts and other mechanical equipment.

In addition to the new two-story power station to be erected on Columbus Place, Yonkers, N. Y., by the Yonkers Electric Light & Power Corporation at a cost of \$200,000, recently announced, preliminary plans are being prepared for the construction of another concrete and steel power station to cost about \$150,000. W. Whitehill, 32 Union Square, New York, is the architect.

The Harrolds Motor Car Co., 233 West Fifty-fourth Street, New York, has filed plans for extensions and improvements in its service and repair works on Freeman Street, near Fifth Avenue, Long Island City, to cost about \$44,000. A one-story side addition will be erected at a cost of \$14,000.

The United States Wire Cloth Corporation, Yonkers, N. Y., has been incorporated with a capital of \$25,000 by A. C. and W. F. Ryan, Yonkers, to manufacture wire specialties and other steel products.

The H. H. Babcock Co., 559 Factory Street, Watertown, N. Y., manufacturer of automobile equipment, parts, etc., has increased its capital stock from \$500,000 to \$1,000,000.

The Almozina Mfg. Co., New York, has been incorporated with a capital stock of \$100,000 by M. Donofrio and H. C. Fette, 116 Nassau Street, to manufacture soldering equipment and mechanical products.

The Brooklyn Commercial Body Co., 470 Clermont Avenue, Brooklyn, manufacturer of automobile bodies, is planning for the installation of new equipment for heavy sheet-metal working, including rotary shears, rolling machine, etc.

The Manhattan Rubber Mfg. Co., 120 Broadway, New York, manufacturer of mechanical rubber goods, is considering plans for a new steam operated electric power plant at its works on Willett Street, Passaic, N. J.

The Keiner-Williams Stamping Co., Vine Street, Richmond Hill, L. I., manufacturer of cans, tanks, etc., has arranged

for the immediate erection of a one-story addition to cost about \$40,000.

The Ravenna Iron Co., Ravenna, N. Y., has increased its capital stock from \$25,000 to \$100,000.

The Trackless Transportation Corporation, New York, has been incorporated with an active capital stock of \$110,000 by S. Ryan, E. C. Bull and A. D. Emil, 1586 Union Street, Brooklyn, to manufacture industrial railroad equipment.

The Hellman Motor Corporation, Long Island City, N. Y., is taking bids through C. F. and D. McAvoy and Leonard Smith, architects, Queens Plaza Court Building, for a one-story service works, 200 x 216 ft., at Ely and Sunwick streets, to cost about \$100,000.

The Croston-Carroll Co., New York, has been organized by F. C. Bangs and L. C. Lindenberger, 42 West Thirty-fifth Street, to manufacture automatic vaporizing apparatus, primers, etc.

Henry Ford, Detroit, Mich., is perfecting plans for the erection of his proposed new tractor manufacturing plant at Green Island, near Troy, N. Y., following approval of President Wilson of the Water Power bill. License is being asked to utilize water power from the dam in this vicinity. The initial plant will comprise about three structures and an administration building. The company has a site totaling approximately 150 acres; a portion will be used for a housing development for operatives.

The American Machine & Foundry Co., Second Avenue and Fifty-sixth Street, Brooklyn, has arranged for a bond issue totaling \$1,000,000.

The J. L. Aircraft Corporation, 347 Madison Avenue, New York, is arranging for the operation of a plant for the manufacture of all-metal airplanes of special design. J. L. Larsen is president.

Hildreth, Casey & Co., New York, has been organized by J. C. Hildreth, H. H. Casey and W. Steinauer, 573 East 136th Street, to manufacture machinery, electrical equipment, etc.

The American Metal Specialties Co., 672 East Twenty-ninth Street, Paterson, N. J., has been incorporated with a capital of \$100,000 by Raymond B., Elbert G. and William G. Steves, to manufacture metal products.

The Richardson & Boynton Co., Dover, N. J., manufacturer of boilers, furnaces, etc., is installing new electric operating equipment, including motors, for increased service. The plant will have a total connected load of about 1000-hp.

The Ludlow Valve Mfg. Co., Troy, N. Y., a New Jersey corporation, manufacturer of high pressure valves, hydrants, etc., has increased its capital stock from \$1,000,000 to \$1,300,000.

The first unit of the new plant of the Smith Rubber & Tire Co., 625 Main Street, Passaic, N. J., now being erected at Garfield, N. J., will be 60x200 ft., steel and concrete. It will be equipped for the manufacture of cord tires and it is proposed to commence the installation of machinery during July. The company will operate with a capital of \$1,000,000. Frederick W. Smith, Rutherford, N. J., is vice-president.

The Eagle Rock Tool & Mfg. Co., West Orange, N. J., has been incorporated with a capital stock of \$100,000 by Joseph Seholm, Oscar Mellin and Richard C. Johnson, 11 Whittlesey Avenue, to manufacture tools and machinery.

The Aeromarine Plane & Motor Co., Keyport, N. J., has perfected a multi-passenger flying airplane boat and proposes to operate at capacity for the manufacture of commercial aircraft of this type. The machines now being produced carry ten passengers.

The Protecto Battery Filler Co., 3 South Walnut Street, East Orange, N. J., has been incorporated with a capital stock of \$600,000 by Louis M. and Louis M. Sanders, Jr., to manufacture battery equipment, automobile parts, etc.

The Jephson-Scott Body Co., Inc., 24 Sterling Street, East Orange, N. J., has been incorporated with a capital stock of \$100,000 by Irving Eisenberg, Maurice A. Potter and E. T. Adams, to manufacture automobile bodies, auto parts, etc.

The Cunard Steamship Co., 24 State Street, New York, has made application to the New Jersey State Board of Commerce and Navigation for permission to build a new terminal at Weehawken, comprising property formerly occupied by the Weehawken Dry Dock Co., foot of Baldwin Avenue, acquired by the Cunard interests earlier in the year. The request also includes use of additional riparian lands. The new terminal will be built in the name of the Cunard Terminal Co., a subsidiary organization. It will consist of eight piers, each 1000 ft. long and from 160 to 170 ft. wide, of double-decked type, each with a five-story warehouse. Electric traveling cranes, trucks and other machinery for handling cargoes will be installed. The entire project is estimated to cost about \$40,000,000.

The William M. Crane Co., Garfield Avenue, Jersey City,

N. J., manufacturer of gas appliances for heating and cooking, has filed plans for the erection of an addition to cost about \$225,000.

Plans have been completed by the Schofield Oil Co., Avenue R, Newark, N. J., for a new one-story power plant, 31 x 91 ft., to cost about \$30,000.

The Boston Wire Works, 580 Springfield Avenue, Newark, has filed notice of organization to manufacture wire goods. Harry Isakoff, 658 South Thirteenth Street, heads the company.

The Accounting Machine Co., 156 Broadway, New York, manufacturer of adding and accounting machines, is planning to inaugurate operations at its new plant on Badger Avenue, Newark, now in course of erection, in about 60 days. The building will be equipped to give employment to about 200. It will be two-stories, brick, steel and concrete, 105 x 135 ft., and with machinery will cost approximately \$200,000. The company has secured an adjoining site and it is expected to prepare plans for an addition at an early date. John J. Harris is president and general manager, and Daniel H. Connor, vice-president in charge of production.

The McAllister-Carton-Stulz Corporation, 1003 Broad Street, Newark, operating an automobile works, has awarded a contract to the Homack Construction Co., 1399 Flatbush Avenue, Brooklyn, for a two-story service and repair building, 70 x 150 ft., at 1001 Broad Street, to cost about \$100,000.

The Federal Shipbuilding Co., Lincoln Highway, Kearny, N. J., affiliated with the United States Steel Corporation, has plans under way for the early construction of its proposed new dry-dock and ship repair works on the Hackensack River, in the vicinity of its present plant. The new dock will be of floating type, capable of handling vessels 425 ft. long, and with capacity up to 12,000 tons. A number of shop and repair buildings will be erected in the immediate location. The dock, shops and equipment are estimated to cost about \$1,500,000. The new repair plant will handle the fleet of vessels of the United States Steel Corporation, including 14 large steel steamers now in service, and 20 additional vessels now being constructed at the yards of the Chickasaw Shipbuilding Co., Mobile, Ala., another subsidiary organization. At its shipyard, the Federal company has 12 shipways, and 10 of these are occupied by ships in course of construction.

The General Lead Batteries Co., Newark, N. J., manufacturer of Titan storage batteries, has recently purchased from the New Jersey Zinc Co. five acres adjoining its present plant at Chapel Street and Lister Avenue, having a deep water frontage of 250 ft. on the Passaic River and 411 ft. on Chapel Street, together with railroad trackage connecting with the Central Railroad of New Jersey. This tract will at once be improved with a series of reinforced concrete buildings having an area of 300,000 sq. ft., plans for which have been prepared by Timmis & Chapman, 315 Fifth Avenue, New York. This added space will enable the company to extend its sphere of activity in the manufacture of storage batteries. The company has also purchased a two and three story brick factory having an area of 65,000 sq. ft., at Eightieth Street and Belt Line Railroad, Chicago, which will be used for manufacturing and storage purposes.

The O'Rourke Crane & Engineering Co., New York, has been incorporated with a capital stock of \$13,750, by P. E. O'Rourke, S. J. Miller and E. T. Vandewater, 311 West Ninety-fifth Street, to manufacture cranes and kindred products.

The Jenkins Elevator Co., New York, has been incorporated with a capital stock of \$20,000 by D. V. Jenkins, E. Donaldson and J. Carlson, 944 Seventy-fourth Street, Brooklyn, to manufacture elevators, etc.

The Amsterdam Lighting Fixture & Novelty Co., New York, has been incorporated with a capital stock of \$50,000 by S. L. Klein and H. Litwin, 2346 Eighty-fifth Street, Brooklyn, to manufacture metallic lighting fixtures and kindred products.

The Brilliant Chandelier Mfg. Co., New York, has been incorporated with a capital stock of \$50,000 by M. Brilliant, A. Drutman and M. Propp, 122 West 114th Street, to manufacture gas and electric fixtures.

The G. Piel Co., 29 Thirteenth Street, Long Island City, manufacturer of machinery and parts, has leased the second floor of the factory at Webster and Vernon avenues, comprising about 15,000 sq. ft., for the establishment of a branch plant.

The National Engineering Co., manufacturer of the Simpson foundry mixer, announces that the address of its permanent Eastern office located in New York is at 1760 Woolworth Building, in charge of the Eastern sales manager, S. H. Cleland.

## New England

BOSTON, June 28.

Machine-tool orders placed the past week made a fairly good showing in the aggregate. The price situation is mixed. One line of bolt, nut, grinding and polishing machines has been advanced at least 20 per cent. Quotations on most makes of other tools are very firm, but price cutting has been going on where competition for business is keen. One representative of a standard milling machine offered to cut his price several hundred dollars if a pump manufacturing concern would place an order for a tool. Representatives of other machines have not hesitated to make concessions if orders were placed. The lathe market, however, is free from price cutting. Deliveries, in most cases, are extended, although not so much as a month ago, but the New England railroad embargo will delay tools on order with Western manufacturers.

Many manufacturers who contemplated the purchase of tools are postponing indefinitely placing orders pending an adjustment of market values. The Brown & Sharpe Mfg. Co., Providence, R. I., which was figuring on turret lathes and other equipment, and the Eco Mfg. Co., South Boston, which contemplated the erection or acquisition of a piston making plant at Cambridge, Mass., have both abandoned their lists. The Fair Haven Mills, New Bedford, Mass., is building a new machine shop, but no new equipment is involved, and the probabilities are that the Worthington Pump & Machinery Corporation will not act on its list until fall. The Dean Steam Pump Co., Holyoke, Mass., a subsidiary of the latter company, has had heavy cancellations of orders. It is interesting to note that the New England subsidiaries of the Worthington Pump & Machinery Corporation have about six months' supply of coal and pig iron on hand.

The Saco-Lowell Works, Boston, is in the market for two planers and the General Fire Extinguisher Co., Providence, R. I., for a few lathes and other tool-room equipment. The Boston & Albany Railroad is asking prices on a 28-in. shaper, the Boston & Maine on a 20-in. wheel lathe and the Boston Elevated Railway on two small planers. The United Shoe Machinery Co., Beverly, Mass., is inquiring for a lathe and shaper and the Federal Board of Vocational Education on a milling machine and grinder. The Thurston Mfg. Co., Providence, R. I., gear cutters, etc., which a short time ago bought 18 milling machines, has a list out for other production tools. The Providence Engineering Co., Providence, has two tentative lists out covering a large number and variety of tools. One is for a crank shaft proposition and the other for a truck wheel, in both cases contract for the work depending on the engineering company being able to get the necessary equipment. Few machine tool builders are able to give prompt deliveries on the required equipment. The Braddock Nail & Mfg. Co., Everett, Mass., contemplates the purchase of a new plant at some New England point, and if the desired property can be obtained, will be interested in a fairly large list. The company makes wire nails and fencing.

Sales the past week include eight lathes and a milling machine to the Amoskeag Mfg. Co., Boston and Manchester, N. H., and the entire list of tool room equipment issued early in June by the Mead-Morrison Mfg. Co., East Boston, hoisting machines. The Thomas Loughlin Co., Portland, Me., marine hardware, has bought a number of tools, including several small lathes, drills, grinders, etc., and the Velle New England Co., Boston, a complete automobile repair outfit. The H & B American Machine Co., Pawtucket, R. I., cotton machinery, has contracted for a 14-in. x 6-ft. lathe, and the Le Ponte Machine Tool Co., Hudson, Mass., for a Lodge & Shipley 17-in. x 10-ft. lathe. The Globe Optical Co., Boston, is starting a die shop in Cambridge, Mass., and has purchased two die sinkers.

The local crane market is more active than for some time. The Saco-Lowell Works bought a 10-ton crane for its Newton Upper Falls foundry and is negotiating for a hand crane outfit for its Lowell foundry. The Haverhill Box Board Co., Haverhill, Mass., has purchased two 3-ton cranes with 60-ft. span and 35-ft. lift. The National Woodworking Machine Co., Dover, N. H., is in the market for a 5-ton hand crane. The Amoskeag Mfg. Co. has signified its intention of buying a 60-ton Niles crane. Olds & Whipple, Hartford, Conn., fertilizers, are to construct a new plant at East Hartford, equipped with an electric crane for unloading from cars.

The New England Tire & Rubber Co., 317 Main Street, Springfield, Mass., automobile tires, has purchased property on Main Street, Holyoke, Mass., from the Holyoke Water Power Co. for its new factory, work on which will soon begin.

Edwin H. Marble, president Curtis & Marble Machine Co., Worcester, Mass., has leased for three years, with an option to purchase, the old Fremont Street power house, Worcester.

of the Worcester Consolidated Street Railway Co., which will be remodeled into a foundry. The building has 40,000 sq. ft. of floor space and is on a 4-acre site. Spur tracks, connecting with the railroad, are included in the property.

Plans are complete for the taking over by the Gorham Mfg. Co., Providence, R. I., the Silversmiths Co., New York, and its subsidiaries, the Mount Vernon Co., Silversmiths, Inc., Mount Vernon, N. Y., the William B. Durgin Co., Concord, N. H., the Whiting Mfg. Co., Bridgeport, Conn., and the William B. Kerr Co., Newark, N. J. John S. Holbrook, president Gorham Mfg. Co., will be chairman of the board of the reorganized company and H. A. MacFarland, president, Silversmiths, Inc., is president and in charge of production. Alfred K. Potter, vice-president and director, Gorham Mfg. Co., has resigned.

Plans are being drawn for a one-story, 26 x 78 ft., addition to the Holtzer Cabot Electric Co., Roxbury, Boston.

The Petroleum Heat & Power Co., Stamford, Conn., has been given a permit to go ahead with its one-story, 50 x 100-ft. foundry.

The Saco-Lowell Works, Boston, has started work on the reconstruction of a one-story, 130 x 137 ft. foundry at Lowell, Mass.

Contract for the two-story, 46 x 171-ft., addition to the machine shop of the Leighton Machine Co., Manchester, N. H., has been let.

The William H. Haskell Mfg. Co., Pawtucket, R. I., machinery and appurtenances, has increased its capitalization from \$450,000 to \$1,000,000.

The Bureau of Yards and Docks, Navy Department, Washington, D. C., has appropriated \$50,000 for the completion of the submarine base at New London, Conn.

The name of the Westgard Machine Co., Wakefield, Mass., has been changed to the George E. Belcher Machine Co. George E. Belcher is president and Ralph P. Rowe, treasurer.

The Prentice Mfg. Co., New Britain, Conn., metal specialties, will increase its capital stock from \$100,000 to \$300,000, the new stock to be offered to stockholders and employees at par.

The National Woodworking Machine Co., Dover, N. H., has let contract for a one-story, 85 x 200 ft., machine shop, 50 x 100 ft., foundry and 40 x 100 ft. pattern shop.

William Crossley, Pasadena, Cal., has sold the property at the corner of Broad and Chapman streets, Providence, R. I., to a Western motor truck manufacturing concern. A two-story assembling plant is to be erected.

The Domestic Vacuum Cleaner Co., Worcester, Mass., will not move from its present quarters at 41 Jackson Street, as its lease does not expire for another year. The company recently acquired the plant of the Worcester Machine Screw Co., which is expected to be fully equipped and in operation before the end of the year.

The Emerson Appliance Co., 251 Causeway Street, Boston, Mass., manufacturer of mechanical appliances, has awarded a contract to Mitchell & Sutherland, Inc., 18 Tremont Street, for the erection of its new one-story plant at Melrose, to cost about \$35,000.

The Hendey Machine Co., Torrington, Conn., manufacturer of special machinery and tools, has increased its capital stock from \$1,200,000 to \$1,600,000.

The New London Broaching Machine & Tool Co., New London, Conn., has been incorporated with a capital stock of \$25,000 by E. L. Streeter, Jr., 85 Squire Street, and Lewis Crandall, to manufacture broaching machines and other mechanical equipment.

The National Collapsible Tube Co., Providence, R. I., has completed plans for the erection of a one-story addition, 50 x 75 ft.

The Bassick Co., Bridgeport, Conn., manufacturer of castors, hardware specialties, stampings, etc., has acquired the plant of the Hawthorne Mfg. Co., Fairfield, near Bridgeport, formerly used for the manufacture of automobile and motorcycle lamps. The building is two stories and basement, 60 x 200 ft., with L-extension, 60 x 60 ft., reinforced-concrete with power plant and one-story adjoining building. It was secured for a consideration of \$105,000 and will be utilized as an extension.

The American Chain Co., Bridgeport, Conn., is arranging for an increase in its capital by an amount of about \$5,000,000.

Fire, June 24, destroyed a two-story building, used as a finishing and die-sinking department at the plant of the Atwater Mfg. Co., Plantsville, near Southington, Conn., manufacturer of hardware products, with loss estimated at about \$125,000.

The Electric Supply & Equipment Co., Hartford, Conn.,

manufacturer of electrical specialties, has increased its capital by \$184,950, making a total outstanding stock of \$356,325.

The Pequot Brass Foundry, Inc., Norwich, Conn., has filed notice of dissolution.

The Edison Electric Illuminating Co., 70 State Street, Boston, Mass., has had plans prepared for the erection of a new one-story power plant on Broadway.

The New England Westinghouse Co., 165 Broadway, New York, has completed plans for a new four-story, brick and concrete machine shop at East Springfield, Mass., to cost about \$200,000, including equipment.

The William H. Haskell Mfg. Co., Pawtucket, R. I., manufacturer of expansion bolts and similar specialties, has increased its capital stock from \$450,000 to \$1,000,000.

The Elm City Brass & Rivet Co., Plainville, Conn., has filed notice of dissolution.

The A. F. Way Co., 32 Union Place, Hartford, Conn., manufacturer of band sawing machinery and other equipment, is taking bids for a one-story plant, 50 x 150 ft., at East Hartford, to cost about \$75,000. Malcolm B. Harding, Elm Street, Westfield, Conn., is architect.

The Olneyville Welding Co., Webster Avenue and Plainfield Street, Providence, R. I., has been organized to manufacture welding equipment. Rudolph Csizmesia, 82 Dorchester Avenue, heads the company.

The Hartford Automobile Club Garage Co., 36 Pearl Street, Hartford, Conn., has completed plans for a seven-story service and repair works, 147 x 150 ft., at Hicks and South Ann streets, to cost about \$500,000.

## Philadelphia

PHILADELPHIA, June 28.

The Schuylkill Forge Co., Third and Luzerne Streets, Philadelphia, has filed plans for a one-story forge shop, 90 x 100 ft., to cost about \$20,000.

The Electric Storage Battery Co., Nineteenth and Allegheny streets, Philadelphia, is arranging for an increase in its capital stock from \$18,000,000 to \$30,000,000. A portion of the proceeds will be used for the erection of the new plant, now under way, machinery, etc. Walter G. Henderson is secretary.

The Abrasive Co., James and Fraley streets, Philadelphia, has filed plans for an addition to cost about \$18,000.

Considerable machinery will be installed in the two-story addition to be erected by the H. C. Fry Glass Co., Rochester, Pa., 90 x 120 ft., and estimated to cost about \$350,000 with equipment.

The City Commission, Trenton, N. J., is planning for the installation of a 1000-hp. turbo-generator at the city pumping station on Calhoun Street, with additional electrically operated pumping machinery with capacity of about 25,000,000 gal. The installation is estimated to cost \$75,000.

The Jackson Electric Motor Repairing Co., Bellevue Avenue, Trenton, is having plans prepared for a new one-story plant, 42 x 100 ft., on property recently purchased on Belvidere Street, to cost about \$10,000.

The Hendrick Mfg. Co., Inc., Carbondale, Pa., manufacturer of steel sheets, and other iron and steel products, is taking bids for a two-story machine shop, 75 x 150 ft.

The General Motors Corporation, Detroit, has inaugurated operations at the plant of the Doylestown Agricultural Works, Doylestown, Pa., recently acquired. Work for the present will be devoted to the manufacture of farm machinery, primarily for export. The company has obtained options on additional property in the vicinity and later plans the erection of works for the manufacture of automobiles and agricultural machinery, estimated to cost in excess of \$500,000.

The Olney Foundry Co., Duncannon Street, Philadelphia, has filed plans for a two-story building on Duncannon Street, near Second Street, to cost about \$15,000. Harry H. Cooks is treasurer.

Eugene H. Davis, 2804 Boudinot Street, Philadelphia, and associates have incorporated the Geyer Depositing Machinery Corporation, with capital stock of \$10,000, to manufacture special machinery.

The Victor Talking Machine Co., Camden, N. J., has taken bids for a one-story concrete addition, 400 x 430 ft. It will also build a new coal pier on Cooper Street, equipped with coal handling apparatus, estimated to cost about \$100,000.

The Bergougnan Rubber Co., East State Street, Trenton, N. J., is planning for the installation of machinery to cost about \$60,000 in its new building, foundation work for which is under way. The company manufactures automobile tires,

etc., and further plans call for additions at a later date to double approximately the present capacity.

## Chicago

CHICAGO, June 28.

There has been a slightly better inquiry for machine tools; in fact, some dealers report last week's sales the best in several weeks. In most instances transactions involve single tools and a portion of the business resulted from the ability of dealers to ship machines from stock. Manufacturers' representatives, who cannot quote early deliveries, are harder hit under present conditions than dealers carrying stocks, as buyers are not willing to place orders for machines that cannot be shipped for several months. Cancellations are becoming more common, but are not so serious as to be actually disturbing, most sellers having sufficient unshipped business on their books to cover them until fall.

Purchases by the Chicago, Rock Island & Pacific have been made the past week against its recent inquiry. The list includes large boring mills, hydraulic presses, radial drills, planers, carwheels, axle and locomotive driving wheel lathes and other special railroad shop equipment. The total outlay will be \$200,000 or \$300,000.

No other railroad inquiry of importance is before the trade, but purchasing agents who were interviewed at the recent railroad convention at Atlantic City, N. J., stated that their requirements are large, and inquiries will be sent out as soon as the executive boards of the roads appropriate funds. The Canadian National Railways, Toronto, Ont., has inquired in this market for an engine lathe, 16 in. x 6 ft., with threading attachment, and a 1000-lb. steam hammer, complete, for shipment to Duluth, Minn.

One of the largest inquiries of the week is from the Ajax Forge Co., 2503 Blue Island Avenue, Chicago, and covers the following equipment:

- One 2000-lb. steam drop hammer.
- One 3000-lb. steam hammer, double frame.
- One trimming press for 2000-lb. hammer.
- One 10-ton crane, 76-ft. span.
- One 5 or 10-ton crane, 35 to 50-ft. span.
- One 2-ton crane, 28-ft. span.
- One guillotine shear, capacity 3 in. rounds, nickel steel, 30 to 40 carbon.
- One air compressor, capacity 500 ft. of air per min., belt driven.
- Six 25,000-gal. oil tanks, 10 ft. 6 in. dia., 38 ft. long, 5/16-in. metal.

The Rockford Malleable Iron Works, Rockford, Ill., will build additions to cost about \$20,000.

The Iron Crib & Bin Co., Morton, Ill., has been incorporated for \$25,000, and will manufacture cribs, roofing, washing machines, ladders and machinery.

The Wall Pump & Mfg. Co., Quincy, Ill., has been organized by George A. Wall, formerly associated with the Gardner Governor Co., Quincy, to manufacture vacuum pumps, presses and other specialties. It has an inquiry out for 20 new or used machines and is in the market for five 16-in. by 8-ft. engine lathes, 3-in. radial drill, No. 3 plain milling machine, No. 2 universal milling machine, one 20-in. and one 18-in. turret lathe, 14-in. lathe, several drill presses, 18-in. disk grinder, a keyseater and tool grinder.

The Alemite Die Casting Co., 241 West Chicago Avenue, Chicago, is taking bids for its new two-story plant at Wastenaw and Belmont streets, 150 x 416 ft., to cost about \$300,000, including equipment. B. C. Ostergren, 155 North Clark Street, is architect.

The Newton Foundry Co., Newton, Iowa, has completed plans for a new one-story foundry, 135 x 300 ft., to cost about \$13,000, exclusive of equipment.

The Des Moines Foundry Co., Flynn Building, Des Moines, Iowa, has completed plans for its new foundry and machine shop at Sixteenth Street and Wabash Avenue, and proposes to inaugurate immediate construction. It will be 130 x 220 ft., and is estimated to cost about \$350,000, including equipment.

The Howard Heater Co., 1015 Murphy Street, Des Moines, Iowa, manufacturer of heating equipment, has awarded a contract to E. W. Nichols, 628 Twenty-third Street, for a one-story foundry addition, 150 x 300 ft., at Tenth and Murphy streets, to cost about \$30,000.

The Illinois Central Railroad, 135 East Eleventh Place, Chicago, is taking bids for the construction of additions to its engine repair shops and engine houses at Clinton, Freeport and Amboy, Ill. The work is estimated to cost \$210,000, divided into \$100,000, \$60,000 and \$50,000 at the various places, in the order noted.

## Buffalo

BUFFALO, June 28.

The Carborundum Co., Buffalo Avenue and Eighteenth Street, Niagara Falls, N. Y., has completed plans for rebuilding the portion of its works recently destroyed by fire. The work is estimated to cost about \$50,000.

The Rochester Motors Co., Rochester, N. Y., operated by the Symington-Hoffman Co., has completed arrangements for an addition for the manufacture of automobile motors. The parent organization has acquired the plant, equipment and other property of the Trego Motors Corporation, New Haven, Conn., and machine tools and machine shop apparatus, will be removed to the Rochester works. The plant will specialize in the production of four and six-cylinder motors, the former of Rochester-Duesenberg type, and the latter of the Trego model. It is planned to commence active production of the Trego motor in the fall.

Considerable mechanical and electrical machinery will be installed in the addition to the plant of the International Paper Co., Buffalo Avenue and Thirteenth Street, Niagara Falls, N. Y., estimated to cost about \$65,000.

The F. Ebert Machinery Co., Port Ewen, N. Y., has filed notice of dissolution.

The Syracuse Vapor Heat Co., Syracuse, N. Y., manufacturer of heating equipment, has increased its capital stock from \$40,000 to \$75,000.

The United States Radiator Co., Geneva, N. Y., has completed plans for the erection of a one-story foundry addition, 70 x 100 ft. on South Exchange Street.

The Co-operative Grange League Federation Exchange, Inc., Syracuse, N. Y., has been incorporated with a capital stock of \$1,000,000 by N. F. Webb, W. L. Bean and H. E. Babcock, Ithaca, to manufacture agricultural implements.

The Crescent Tool Co., 201 Harrison Street, Jamestown, N. Y., is planning for the installation of new equipment at its forge shop.

The H. H. Franklin Mfg. Co., Syracuse, N. Y., manufacturer of automobiles, has filed notice of reorganization, covering recent financing plans, to operate with an active capital of \$18,000,000.

The Atmospheric Nitrogen Corporation, Milton Avenue, Syracuse, N. Y., is taking bids for the erection of its new plant at Willis Avenue and State Boulevard, comprising several one-story structures, estimated to cost about \$1,000,000, including equipment. The company is affiliated with the Solvay Process Co. E. L. Pierce is president of both organizations. The J. G. White Engineering Corporation, 43 Exchange Place, New York, is engineer for the project.

## Cleveland

CLEVELAND, June 28.

The machinery market continues dull. Dealers are doing a moderate volume of business in single machines, but inquiries of size are lacking. Practically no sales are being made except for very early shipment, and prospective purchasers refuse to consider machines on which deliveries cannot be made for three or four months. Cancellations so far have been surprisingly light, but some proposed extensions that had not reached the point of placing machinery have been deferred. Several manufacturers state that they will not consider the purchase of additional machinery until the transportation situation shows marked improvement and deliveries of steel and coal are bettered.

Some machine tool builders are getting in much better shape on deliveries and in some cases are building machinery for stock, but others that have been affected by labor and material shortages are about as far behind as ever. Practically no export business is coming out. The Cleveland Hardware Co. has purchased the 20 drilling machines recently asked for, and is now inquiring for two engine lathes.

Local inquiries pending include one from the Hydraulic Steel Co. for a small power press, one from the Cleveland Heater & Mfg. Co. for a 24-in. planer and one from the Perfection Auto Products Co. for a horizontal tapping machine.

The Hertner Electric Co., Cleveland, has purchased a 5-acre site on Elmwood Avenue near Berea Road, and plans the erection of a factory for the manufacture of electrical supplies.

The Vapo-Stove Co., Lima, Ohio, recently organized to manufacture oil-burning stoves, has acquired a site and will shortly commence the erection of a plant. Carl Rowlands is president, Howard Graham, vice-president; Fred Schulenberg, secretary, and G. O. Dupuis, treasurer.

The Atlantic Foundry Co., Akron, Ohio, has about completed a new gray iron foundry in Cuyahoga Falls, Ohio,

which it will operate in connection with its Akron plant. The building is of brick and steel, 120 x 175 ft., with saw-tooth roof. Considerable foundry equipment will be purchased, including small cranes, hoists, air compressors and tumbling barrels.

The Wyandot Burial Vault Co., Upper Sandusky, Ohio, recently incorporated with a capital stock of \$250,000, will equip a plant for the manufacture of steel burial vaults. James Walker is president; E. F. Stephan, vice-president; C. C. Whartemby, secretary, and F. L. Whartemby, general manager.

The Shelby Wire Co., Shelby, Ohio, is enlarging its plant by the erection of two buildings, 40 x 350 ft. and 40 x 170 ft. respectively, and has increased its capital stock from \$35,000 to \$75,000 to take care of expansions.

The Bryan Pattern & Machine Co., Bryan, Ohio, placed its large new plant in operation June 25.

## Cincinnati

CINCINNATI, June 28.

The local machinery market has been a little more active the past week, and some good business was booked from the railroads. The engine lathes on the list recently issued by the Atlantic Coast Line have been placed with a Cincinnati machine tool manufacturer and also those on the list of the Chicago, Burlington & Quincy. This latter purchased additional machinery in this market the past 10 days. The St. Louis Terminal Association has issued a list, including one 48-in. engine lathe, two 24-in., two 18-in., one 16-in. and one 90-in. wheel lathes. One local machine tool builder, who does a good business in South America, reports that during the month he has received orders for 30 lathes from Buenos Aires, six of these coming in the past week. The Union Pacific and the Canadian Pacific railroads also were purchasers, and the latter is inquiring for a few more tools for its new shop at Montreal. Several manufacturers state that much of the new business being placed is coming from the West, particularly along the Pacific Coast.

The machinists' strike still drags, and 5000 men are still out. A number of the strikers are returning to work and on last Monday several shops which had been closed since early in May were able to start up with from 25 to 50 per cent of their former men back on the job. Several shops, which have been operating at high pressure since early in the war, have so far caught up with orders that, with the reduction in new business offering, they do not feel justified in carrying such a large force and have advised their employees of their intention to reduce the working force on July 1. This condition is not general, however, as most of the machine tool builders have sufficient orders booked to keep the plants running from two to four months without taking on any new business.

The Lunken Window Co., Cherry Street, Cincinnati, which is contemplating the erection of an extension, has acquired several parcels of land adjacent to its present premises. It is understood that plans provide for the construction of a two-story building.

Stockholders of the Dalton Adding Machine Co., Cincinnati, at a special meeting held on Thursday last, approved an increase in the common stock from \$2,750,000 to \$10,000,000. The company is constructing an addition to its plant and the new stock is to take care of increased business.

The Dayton Malleable Iron Co., which recently was authorized to increase its capital stock, will start work within a few weeks on extensions to its plant at Ironton, Ohio. Two buildings will be erected, which will increase the capacity about 50 per cent. A new office building will also be built.

The Springfield Auto Lock Co., Springfield, Ohio, has been incorporated with a capitalization of \$100,000. The company will manufacture a patented auto lock. J. G. Hoeftick, Springfield, is president.

The Elwood Myers Co., Springfield, Ohio, has been authorized to increase its capitalization from \$2,000,000 to \$2,500,000, \$500,000 to be preferred stock. It manufactures sheet metal products and has recently received an order for metal cans amounting to nearly a half million dollars.

## Detroit

DETROIT, June 28.

Delay in deliveries, restricted credits and the transportation situation continue to keep the machine tool market dull in this district. Very few cancellations are recorded, but buyers are inclined to keep out of the market for the time. Dealers state business is fairly good, but look for much improvement before autumn.

The Triangle Truck Co., St. Johns, Mich., has voted a

10 per cent stock dividend and will increase its capital stock from \$200,000 to \$400,000.

The plant of the Upton Machine Works, St. Joseph, Mich., is being doubled in size at a cost of \$75,000 and will provide 100,000 sq. ft. of floor space.

The Roadway Transmission Co., Grand Rapids, Mich., recently organized with a capital stock of \$1,000,000, has purchased 25 acres and will erect a \$250,000 plant for the manufacture of disk wheels for automobiles.

For the third time during the last year the plant of the Standard Casting Co., Lansing, Mich., was recently badly damaged by fire. It was necessary to close the plant for two weeks.

The Kuhlman Electric Co., Bay City, Mich., has increased its capital stock from \$75,000 to \$150,000, to take care of its growing business and extensions.

The Detroit Star Wheel Grinding Co., Detroit, will build a one-story addition, 80 x 140 ft.

The International Metal Stamping Co., Detroit, will build a two-story addition, 17 x 85 ft., and a one-story addition, 79 x 532 ft.

The D. J. Ryan Foundry Co., Ecorse, Mich., has increased its capital stock from \$500,000 to \$2,000,000.

The Vassar Foundry Co., Vassar, Mich., has increased its capital stock from \$40,000 to \$100,000.

The Carde Stamping & Tool Co., Saginaw, Mich., will soon start work on a one-story plant, 50 x 200 ft. to cost \$75,000.

The Atlas Iron Works, Detroit, has increased its capital stock from \$100,000 to \$200,000.

The South Haven Foundry & Machine Co., South Haven, Mich., has increased its capital stock from \$25,000 to \$50,000.

The General Drop Forging Corporation, 54 West Lafayette Boulevard, Detroit, will take bids early in July for its new two-story plant, 65 x 216 ft.

The F. M. Foster Truck Co., 980 East Jefferson Avenue, Detroit, is having plans prepared for a new four-story service works, 100 x 120 ft.

The Studebaker Corporation, South Bend, Ind., manufacturer of automobiles has awarded contract to the A. J. Smith Construction Co., Detroit, for a new five-story plant at Clark and Jefferson streets, Detroit, 68 x 441 ft.

The Consolidated Truck & Tractor Corporation, Detroit, a Delaware corporation, has increased its capital stock from \$1,500,000 to \$2,500,000 and changed its name to the Consolidated Automotive Industries, Inc.

The Swedish Crucible Steel Co., Hamtramck, Mich., is completing preliminary plans for a four-story addition. C. E. Randfield is secretary.

The Jefferson Forge Products Co., Jefferson Avenue, Detroit, has arranged for the immediate erection of a one-story forge shop, 40 x 120 ft., to cost about \$20,000.

## Indianapolis

INDIANAPOLIS, June 28.

The Campbell Wire Specialty Co., South Main Street, South Bend, Ind., has awarded a contract to Joseph Good, 118 Woodward Avenue, for a new one-story and basement plant, 66 x 165 ft., to cost about \$60,000. Marvin Campbell is president.

The Overland Crane Co., Hammond, Ind., has broken ground for the erection of a new plant.

The Pioneer Brass Works, Indianapolis, has taken bids for the erection of a one-story foundry, 150 x 150 ft., to cost about \$75,000. Charles Grossman, 1503 Merchants' Bank Building, is the architect.

The City Council, Anderson, Ind., is completing plans for a new municipal electric light and power plant to cost about \$300,000. J. Essington is city clerk.

The Board of Education, Indianapolis, is considering plans for a new mechanical and machine shop at the Technical High School, to cost about \$150,000, including equipment.

The Inland Motor Sales Corporation, Indianapolis, has completed plans for the erection of a new four-story service works, for repair and parts manufacture, 70 x 300 ft., at Meridian and Illinois streets, to cost about \$200,000.

The Sheridan Motors Co., Muncie, Ind., manufacturer of automobiles, is arranging for the erection of a new plant on a local site.

The Indianapolis Drop Forge Co., 510 South Harding Street, Indianapolis, has arranged for the immediate erection of its one-story forge shop, 51 x 90 ft., to cost about \$12,000.

The International Harvester Co., Chicago, has purchased 140 acres at Fort Wayne, Ind., on which the first unit of a motor truck plant, to cover about 12 acres, will soon start.

The factory is intended to relieve the congestion at the company's plant at Akron, Ohio. It has also bought the plant of the Quaker City Machine Co., Richmond, Ind., in addition to that of the American Seeding Co. The Seidel Buggy Co., recently purchased by the American Seeding Co., has also been taken over by the International company.

The Kokomo Machine Co. has been incorporated at Kokomo, Ind., with \$15,000 capital stock to manufacture automobile parts. The directors are Edward E. Dean, Charles O. Wiley and Porter A. Wiley.

The Logansport Castings Co., Logansport, Ind., has filed a certificate of dissolution.

The Liberty Car Wheel Co., Hammond, Ind., has been dissolved.

The Indestructible Wheel Works, Lebanon, Ind., has closed a \$500,000 contract with the Elgin Motor Corporation for 24,000 solid steel touring car wheels. The capacity of the plant will be tripled. A. M. Lofland is manager.

The Haywood Foundry Co., Indianapolis, has been incorporated with \$150,000 capital stock. The directors are Miner E. Haywood, president and general manager Haywood Tire & Equipment Co.; Arley H. Cromley, secretary-treasurer of the same company, and Harry Farris.

The National Steel Casting Co., Montpelier, Ind., has increased its capital stock from \$200,000 to \$500,000.

The Ohio River Hub Co., New Albany, Ind., has increased its capital stock from \$10,000 to \$50,000.

The Sandusky-Portland Cement Co., Syracuse, Ind., is spending \$150,000 in equipping its plant for the manufacture of cement from limestone instead of marl.

## Baltimore

BALTIMORE, June 28.

In addition to the one-story machine shop to be erected at its plant at a cost of \$25,000, the Baltimore Tube Co., Ostend and Wicomico streets, Baltimore, manufacturer of metal tubing, will build several other extensions of brick and concrete. Contracts have been let to the West Construction Co., American Building.

John Duer & Sons, Inc., 36 South Charles Street, Baltimore, manufacturer of casters, hardware specialties, etc., has increased its capital stock to \$200,000.

The Delaware Engineering Co., Wilmington, Del., manufacturer of special machinery, is planning for additions. It is said to have orders on hand to insure capacity operations for 24 months.

The Columbia Railway, Gas & Electric Co., Columbia, S. C., is planning for additions in its electric power plant to cost about \$400,000, including new hydroelectric machinery.

The Gibbons-Coulter Co., Atlanta, Ga., recently incorporated to manufacture tools, machine parts, etc., is planning for the establishment of a local plant. H. S. Gibbons and N. A. Coulter head the company.

The Green Stone Products Co., Roanoke, Va., is planning for the immediate erection of a new mill at its properties at Deerfield, Md., to cost about \$75,000, including machinery.

The Virginia-Carolina Rubber Co., Real Estate Building, Richmond, Va., has awarded a contract to Ernest Brothers, Real Estate Exchange Building, for a new one-story plant, 50 x 240 ft., to cost about \$15,000, exclusive of machinery.

The Union Iron Works, Union, S. C., has been incorporated with a capital of \$10,000 by J. S. Hodge, J. M. Moss and C. L. Hicks, to manufacture iron and steel products.

The Motor Truck & Trailer Co., Kinston, N. C., has been incorporated with a capital stock of \$100,000 by E. V. Webb, T. G. Hyman and A. D. O'Bryan, to manufacture motor trucks, trailers, parts, etc.

The Cyclone Starter & Truck Co., Greenville, S. C., has awarded a contract to the H. K. Ferguson Co., Cleveland, for the erection of its new local plant, 100 x 260 ft. At an early date it is proposed to erect a number of other buildings, with total floor area aggregating over 250,000 sq. ft. Preliminary plans are under way.

The Coastwise Shipbuilding Co., foot of Andre Street, Baltimore, has increased its capital stock from \$200,000 to \$300,000.

The National Enameling & Stamping Co., Ostend and Race streets, Baltimore, will receive bids for a three-story, 61 x 76 ft. addition.

The Southern Implement Mfg. Co., Columbus, Ga., wants quotations on second-hand bolt-threaders.

Prices on screw-cutting engine lathes are desired by the Atlantic Paper & Pulp Corporation, Savannah, Ga.

The Atlanta Textile Machinery Co., Atlanta, Ga., has been organized with \$50,000 capital stock. S. V. Upchurch is president and C. L. Upchurch secretary.

The Boiler Equipment Service Co., Atlanta, Ga., has been incorporated with \$30,000 capital stock by E. A. Brooks, J. Fisher and Louis Estes.

## Pittsburgh

PITTSBURGH, June 28.

Activities in the machinery and equipment market in this district are not pronounced. Numerous inquiries are before crane builders, but actual orders are few. Practically all of the steel companies have been considering extensions and betterments involving the installation of much new equipment, but in the past few weeks, because of the unsettled industrial situation growing out of tight money and the railroad transportation snarl, a progressively increasing tendency to postpone purchases has been observed. This is particularly true of the United States Steel Corporation subsidiaries, several of which have had inquiries out for cranes and other heavy equipment. Officials of the Steel Corporation appear loath to grant requests for plant appropriations at present. The Follansbee Brothers Co., Pittsburgh, has placed a bucket crane for its coal crushing plant at its new works at Toronto, Ohio, with the Milwaukee Electric Crane & Mfg. Co. Live crane inquiries out in this market include a 5-ton overhead for the Ferguson Steel & Iron Corporation, Buffalo; a 5-ton trolley for the American Steel Foundries, for one of its western Pennsylvania works; two monorail hoists for the Pressed Steel Car Co., Pittsburgh; 5-ton overhead for the St. Mary's Wheel & Spoke Co., St. Mary's, Ohio, and a 5-ton, 40-ft. span, and 5-ton, 60-ft. span for the Lunkenheimer Steel Co., Cincinnati. Machine tool dealers report a good day to day demand, but sales as a rule run almost entirely to single lots. One dealer, however, reports the sale of tools for shipment to Havana for the Republic Glass Co., manufacturer of bottles, the purchases including a 24-in. shaper, 28-in. and 20-in. drill, 14-in. floor grinder, 36-in. band saw, 24-in. pattern-making lathe and an 18-in. 10-ft. engine lathe.

The works of the DeLong Motor Car Co., South Highland Avenue, near Alder Street, Pittsburgh, have been purchased by A. M. Bakewell for about \$55,000 with additional amount for equipment. While no announcement has been made, it is said that the plant will be operated by the Bakewell Motor Car Co., in which the purchaser is interested.

The Standard Tank Car Co., Pittsburgh, has arranged for an equipment note issue to total \$1,100,000.

The Cambria Steel Co., Johnstown, Pa., has inaugurated the construction of a two-story addition, 61 x 240 ft., to cost about \$75,000, to be used for an electric repair shop.

The Kelley Foundry & Machine Co., Elkins, W. Va., has been incorporated with a capital stock of \$25,000 by Samuel T. Spears, C. H. Hall and S. H. Watring to manufacture machinery and parts.

The West Virginia Rail Co., Eighteenth Street and Second Avenue, Huntington, W. Va., has awarded contract to the Pittsburgh Bridge & Iron Co., Pittsburgh, for four one-story additions; two buildings will be 80 x 110 ft. each, and the other structures, 60 x 120 ft. and 60 x 80 ft., respectively.

The Wheeling Can Co., Warwood, W. Va., a subsidiary of the Whitaker-Glessner Co., has construction under way on an addition which is expected to double approximately the present output.

The Welch Hardware Co., Welch, W. Va., has been incorporated with a capital stock of \$50,000 by John C. Summers, B. O. Swope and John M. Turner, to manufacture hardware products.

The Crane Co., 636 South Michigan Avenue, Chicago, manufacturer of valves, steam specialties, etc., is having preliminary plans prepared for a new pipe shop at Twenty-fourth Street and the Allegheny Valley Railroad, Pittsburgh.

The Silica Sand Products Co., 409 Fitzsimmons Building, Pittsburgh, has had plans prepared for a new crushing plant at its properties in West Virginia, 20 x 40 ft., estimated to cost, with machinery, \$50,000. K. G. Crawford heads the company.

The Miller Rubber Co., Akron, Ohio, manufacturer of automobile tires, has acquired about 65 acres at Nitro, W. Va., for the establishment of a new plant.

George B. Binlein, 707 Peoples Bank Building, Pittsburgh, and associates have incorporated the Protected Seat Valve Co., with capital stock of \$10,000 to manufacture valves and other steam specialties.

The Pittsburgh Screw & Bolt Co., Pittsburgh, is arranging for an increase in its capital stock from \$3,000,000 to \$4,000,000.

The Keystone Driller Co., Eighth Street, Beaver Falls, Pa., manufacturer of well-drilling machinery, pumps, etc., will build an addition to its machine shop to cost about \$150,000. A new brick and steel foundry is now in course of erection. R. M. Downey is manager.

The American Steel Products Co., Johnstown, Pa., has been incorporated in Delaware with capital stock of \$300,000 by W. H. Ream and J. V. Hughes, Johnstown; and George J. Young, Pittsburgh, to manufacture iron and steel products, welding equipment, etc.

The Motor Engineering Co., Parkersburg, W. Va., has been organized and will make a specialty of rebuilding automobiles. O. C. Pratt, formerly with the Westinghouse Machine Co., Pittsburgh, heads the company.

The Kelley Foundry & Machine Co. of Elkins, W. Va., has been incorporated with a capitalization of \$25,000 to do a general foundry and machine shop business. The incorporators are Samuel T. Spears, C. H. Hall, J. W. Watring, J. F. Kelley and J. P. Kelley, all of Elkins.

## Milwaukee

MILWAUKEE, June 28.

The Pfau Motor Pump Co., 248 Fourth Street, Milwaukee, has filed articles of organization with a capital stock of \$150,000 to do a general manufacturing and machine shop business. Otto C. Pfau, Leo A. Wenzel and Richard C. Jischkowski are the organizers.

The Badger Tube Expander Co., recently incorporated at Madison, Wis., has leased a plant on Oregon Road and is installing equipment to manufacture a device patented by T. J. Dixon, president of the company. It will be manufactured in three sizes and is used in expanding tubes in boilers. Mr. Dixon and T. Flore, formerly employed at the Milwaukee Road shops, and H. D. Sandberg, who has been with the Gisholt company, are the incorporators.

The Lake Motor Co., operating in connection with the Appleton Machine Co., Appleton, Wis., is installing new lathes, screw machines and other equipment which will greatly increase the output of gas motors. The present daily capacity of 10 motors will be increased to about 50 within the next six or eight months.

The Oskosh Motor Co., Oskosh, Wis., contemplates the erection of another addition which will provide nearly 50 per cent more space than is afforded by the building now under construction. Plans provide for 200 ft. to the west end of the new structure, 103x452 ft. making the building 600 ft. long.

W. T. Spillman, Fond du Lac, Wis., has moved to Waukesha, Wis., where he has taken over the former Federer building on Main Street. Equipment is being installed and a general machine shop business will be conducted.

Construction is progressing on the new plant of the Bernert Mfg. Co., North Milwaukee, Wis. The company is now located in Milwaukee but is erecting a new plant with its own foundry at North Milwaukee. The facilities will provide for the complete manufacture of grain blowers, conveyors, etc.

Incorporation of the Kenosha Foundry Co., Kenosha, Wis., with a capital stock of \$100,000, will result in the erection of a new plant for the manufacture of iron and steel products, construction to begin as soon as a suitable site is found. The officers are: Ole Arneson, president; Frank J. Farnam, vice president; N. J. Werner, secretary, and F. J. Kraft, treasurer.

Manitowoc, Wis., will be the new home of the Jacquet Motor Car Co., now located at Belding, Mich., according to announcement. Work on the erection of an automobile factory will start immediately. A worm drive truck will be manufactured after the firm becomes established. Alfred J. Jackson, is head of the company.

The Globe Electric Co., 193 Broadway, Milwaukee, is erecting a manufacturing building at Keeffe and Humboldt avenues, of brick and steel, 150 x 300 ft. Robt. L. Reisinger & Co., are general contractors.

The Mechanical Appliance Co., Milwaukee, manufacturer of electrical motors, controlling devices, etc., which recently increased its capital stock and will enlarge its works has the following officers: Louis Allis, president; R. G. Kellogg, vice president; Edward P. Allis, secretary and O. F. Pihl, Jr., treasurer.

## The Gulf States

BIRMINGHAM, June 28.

The Linde Air Products Co., 30 East Forty-second Street, New York City, manufacturer of acetylene equipment, oxygen, etc., is planning for the erection of a new plant in the vicinity of New Orleans, La., to cost about \$250,000.

The Continental Gin Co., Birmingham, Ala., manufacturer of cotton ginning machinery, etc., is planning for additions to its two plants in this section and branch works at Atlanta, Ga. R. S. Munger is vice-president.

C. E. Kerr and S. M. Kerr, Corsicana, Tex., are organizing a company with a capital stock of \$100,000 to establish a local plant for the manufacture of special machinery, parts, etc. It is proposed to erect a new building.

The Hog Creek Oil & Refining Co., Stephenville, Tex., is planning for the erection of a new refinery to cost about \$500,000, including equipment.

The Corsicana Grader & Machine Co., Corsicana, Tex., recently incorporated with a capital stock of \$100,000, has plans under way for its new factory, 40 x 100 ft. The initial capacity will be four graders per day, to be increased later. F. N. Drane is vice-president.

The Briggs-Weaver Machinery Co., Dallas, Tex., has increased its capital from \$500,000 to \$750,000.

J. M. Moore, Okmulgee, Okla., is having plans prepared for a four-story service and repair works for automobiles and trucks, 100 x 100 ft., to cost about \$250,000, including equipment. Smith, Rea, Lovitt & Senter, Parkinson Building, are the architects.

The St. Bernard Mining Co., Arcade Street, Nashville, Tenn., has completed plans for a two-story machine and repair works at its properties, 65 x 130 ft., to cost about \$25,000.

The City Council, Laurel, Miss., has arranged for a bond issue of \$50,000 for the construction of a municipal electric light and power plant.

The Panama Machinery & Supply Co., Panama City, Fla., has been organized by J. A. Smith, J. W. Savell and S. A. Sims.

The Sweetwater Machine & Foundry Co., Sweetwater, Tex., has been incorporated with a capital stock of \$10,000. H. E. Powell is a stockholder.

The Texas & Pacific Railway, with principal offices at Dallas, Tex., will rebuild its machine shops at Big Springs, recently destroyed by fire.

The Planters Gin Co., Chicota, Tex., will build a cotton gin at a cost of about \$10,000. G. W. Campbell is a stockholder.

The Western Welding Mfg. Co., El Paso, has been incorporated with a capital stock of \$10,000. J. W. Crowdus is a stockholder.

The Patriot Motors Co., Lincoln, Neb., contemplates building a plant either in Fort Worth or Houston, Tex., to manufacture automobile and motor truck bodies. E. C. Hammond is vice-president.

J. D. Bruce & Sons, Floresville, Tex., have purchased the electric light and power plant at that place from B. H. Martin and associates. It will be enlarged and new machinery installed.

## California

LOS ANGELES, June 22.

The Pacific Porcelain Ware Co., 67 New Montgomery Street, San Francisco, has had plans prepared for a new plant at Fifteenth and Nevin streets, Richmond, Cal., to consist of five one-story buildings. The machinery installation will comprise die-making machinery, presses, drying equipment, etc.

The Acme Metal Bed Works, 2808-10 South Main Street, Los Angeles, has filed notice of organization to manufacture metal beds. P. N. Morgan, 2108 West Forty-eighth Street, heads the company.

The sawmill of the Georgetown Lumber & Supply Co., Georgetown, Cal., was destroyed by fire, June 14, with loss estimated at \$50,000, including machinery.

The Alhambra Sheet Metal Works, First and Main streets, Alhambra, Cal., has been organized to manufacture sheet metal products. Charles Wolf, 915 South Second Street, heads the company.

The Hy-Press Mfg. Co., Oakland, Cal., manufacturer of rotary pumps, has commenced the erection of its new plant. It was recently incorporated with a capital stock of \$200,000. L. A. Moberly is president.

The Turner Oil Co., Los Angeles, is arranging to rebuild

the portion of its oil refinery, destroyed by fire on May 22, with loss estimated at \$200,000, including equipment.

The Mills Ignition Works, 1005 West Thirty-ninth Place, Los Angeles, has filed notice of organization to manufacture ignition equipment. Victor W. Mills is head.

The Hanford Iron Works, San Bernardino, Cal., has awarded contract to J. J. Barker, San Bernardino, for a one-story addition for general iron working. The Baker Iron Works, Los Angeles, will install a 10-ton electric traveling crane at the plant and other equipment will be ordered at an early date.

The Oil Mining Equipment Co., Los Angeles, manufacturer of oil well machinery, broke ground June 10 for its new one-story plant, 80 x 547 ft., with wing extension, 60 x 150 ft., at Fifteenth Street. R. Rosenberg is president.

The Hoffman Hardware Co., 229 South Los Angeles Street, Los Angeles, manufacturer of hardware products, has increased its capital stock from \$250,000 to \$350,000.

The Board of Trustees of the Montebello High School District, Montebello, Los Angeles County, Cal., has had plans prepared for a new machine and mechanical shop, 45 x 72 ft. Charles W. Schaak is clerk.

## The Central South

ST. LOUIS, June 28.

The Missouri-Pacific Railroad Co., Railway Exchange Building, St. Louis, has awarded a contract to J. D. Fitzgerald, 1203 North Grand Avenue, for a one-story car repair shop, 40 x 200 ft., at Paragould, Ark., to cost about \$25,000.

The Arbon Aviation Corporation, Tulsa, Okla., has been incorporated with a capital stock of \$25,000 by R. D. Hanawalt, Paul Arbon and E. Lynch, to manufacture airplanes and parts.

The Fortified Mfg. Co., Agnes and Fourteenth streets, Kansas City, Mo., manufacturer of electric heating specialties, is completing plans for a two-story addition.

Fire, June 15, destroyed a portion of the refining works of the Linder Oil Corporation, Second Street and Greenwood Avenue, Tulsa, Okla., with loss estimated at \$100,000. The company is operated by the Constantine Refining Co., Tulsa, which recently suffered a loss by fire at its refinery at West Tulsa.

The Kentucky Public Service Corporation, Bowling Green, Ky., has had plans prepared for a new electric generating plant in the vicinity of Clarksville, Tenn., to cost about \$100,000, including machinery. J. D. Fitch is general manager.

The St. Louis & San Francisco Railroad, St. Louis, is planning for the erection of shops and engine houses at Newburg, Monnett and Afton, Mo., with estimated cost of \$40,000 each, and a similar plant at Oklahoma City, Okla., to cost about \$55,000. F. G. Jonah is chief engineer.

The Louisville Gas & Electric Co., Louisville, is planning to rebuild its power plant and coal tipple at Echols, Ky., recently destroyed by fire.

The Jiffy Rim Lock Co., 313 Scarritt Arcade, Kansas City, Mo., has been organized to manufacture automobile locking devices and kindred specialties. R. M. Burgess and W. B. Sebastian head the company.

The Kentucky Tire & Rubber Association, Louisville, Ky., has taken out a permit for the erection of a building 60 x 258 ft., with two L's, 64 x 30 ft. and 50 x 50 ft., of concrete and steel, estimated to cost about \$75,000.

## The Pacific Northwest

SEATTLE, June 22.

Reports from various sections in this district indicate a tendency on the part of purchasers of machine tools and equipment to hold off until more definite deliveries can be made, also with a view of obtaining lower prices.

The entire plant and equipment of the Skinner & Eddy Shipbuilding Corporation, Seattle, has been placed on sale by the Barde Industrial Corporation, New York and Portland, which purchased the plant. The property and equipment include power and compressor plants, foundry forge, machine, pattern and joiner shops, pipe shops, sheet metal shop with machinery, auto trucks, locomotive cranes, etc. The Skinner & Eddy corporation plans to convert its former shipbuilding site into a huge waterfront terminal, with wharfage facilities a half mile in length.

The Laher Auto Spring Co., Seattle and Portland, manufacturer of automobile springs, has purchased a site in Spokane, on which it will erect another plant.

Oscar Sather, Hoquiam, Washington, plans the construc-

tion of a mill at Carlisle, Wash., with a daily capacity of 220,000 shingles.

The Arsneau Automatic Tumbler Lock Co., Portland, recently incorporated for \$300,000 by Thomas P. Arsneau, Oscar W. Horne, and others, contemplates the establishment of a plant for the manufacture of patented locks.

The lumber mill, planer and kiln of the Russell & Pugh Lumber Co., Springston, Idaho, were recently destroyed by fire with loss of \$50,000. The plant will be rebuilt.

The Sanford Friction Thresher Co., Centralia, Wash., contemplates the construction of a plant to manufacture threshers and other farm equipment. A. C. Sanford is president.

## Canada

TORONTO, June 28.

The Elliott & Whitehall Machine & Tool Co., Ltd., Galt, Ont., which is erecting a plant to cost \$40,000, is in the market for milling, slotting and shaping machines, etc.

The McKinnon Industries, Ltd., St. Catharines, Ont., is in the market for one belt-driven trimming press, 36 in. between housings, 4-in. stroke with side cut out, dimensions equal to Toledo No. 93.

The Canadian National Railways will build a roundhouse and machine shop at Saskatoon, Sask. A. E. Warren, Union Station, Winnipeg, is general manager.

The Stansell Motors, Ltd., Amherstburg, Ont., will build a factory for the manufacture of automobile bodies, etc.

W. R. Bonnycastle, architect, 1950 Horo Street, Vancouver, B. C., is preparing plans for a power house for the Bridge River Power Co., to cost \$30,000,000. The project includes six power units at a cost of \$5,000,000 each, and the development of 40,000 hp.

J. M. Leamy of the Manitoba Power Commission, Winnipeg, will receive bids until July 7, for a power house at Virden, Man. He is also receiving bids for three-phase, 2300-volt generators and switching equipment and two semi-Diesel engines, direct connected to alternating current generator. Specifications are with the chief engineer, New Parliament Buildings, Winnipeg.

The McLaren Lumber Co., Calgary, Alta., is preparing plans for a sawmill in southern Alberta to cost about \$100,000.

The National Show Case Co., 93 Richmond Street West, Toronto, will build an addition to its factory.

The St. Maurice Paper Co., Cap de la Madeleine, Que.,

has awarded the general contract to the George D. Fuller Construction Co., 285 Beaver Hall Hill, Montreal, for the erection of a grinding mill to cost \$500,000 and a machine shop to cost \$30,000.

The Sheet Metal Products Co., 199 River Street, Toronto, has let the contract to Brown & Cooper, Ltd., 297 Carlton Street, for a factory to cost \$85,000.

John T. Hepburn, Ltd., 18 Van Horne Street, Toronto, will start work at once on the erection of a foundry addition.

Woollatt & Loveridge, Ltd., Windsor, Ont., has been incorporated with a capital stock of \$50,000 by William R. Woollatt, Stanley E. Loveridge and others to manufacture automobiles, trucks, tractors, motors, etc.

The sawmill owned by Albert Marsh, Arden, Ont., was totally destroyed by fire June 23, with a loss estimated at \$35,000. It will be rebuilt and new equipment installed.

The Dominion Brass Products, Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by Edward A. H. Martin, 44 Elgin Avenue; Thomas B. Richardson, Room 41, 2 Wellington Street East, and others to manufacture metal products.

M. White & Son, scrap metal brokers, P. O. Box 198, London, Ont., intend to erect a factory to make cotton and woolen waste and are in the market for the necessary equipment.

Tobin & Mitchell, Leister, Eastern Townships, propose to erect a sawmill at Bell River, Que., to cost about \$60,000.

Contracts have been awarded in connection with the new \$250,000 factory to be erected in Toronto, for the Canadian General Electric Co., 212 King Street West, and work will start immediately.

The Home Appliances Mfg. Co., Ltd., Winnipeg, has been incorporated with a capital stock of \$250,000, by Arthur E. Cox, John R. Campbell, George F. Chadburn and others, to manufacture washing machines, machinery tools, etc.

The plant of the John Watson Mfg. Co., Ayr, Ont., was damaged by fire to the extent of about \$200,000. It manufactured agricultural implements and warehouse trucks, and will probably be rebuilt at once.

The Grinnell Co., of Canada, Ltd., has placed a contract with the Anglin-Norcross Co., Ltd., Toronto, for a gray iron foundry in Toronto, 100 x 220 ft. Plans have been prepared by the H. M. Lane Co., Detroit. The Grinnell Co., which is engaged in the manufacture of fire extinguishing equipment will also place a contract shortly for the erection of a machine shop.

## NEW TRADE PUBLICATIONS

**Pulley Tread.**—Smith & Serrell, 90 West Street, New York. Bulletin 201. Concerned with "Pulmore" pulley tread, a chemically treated fiber compressed into sheet form and to be applied to iron, steel, wood or paper pulleys to reduce belt slip.

**Bearing Alloy.**—Ajax Metal Co., Philadelphia. Folder. Describes Ajax Bull bearing alloy and presents seven reasons why industrial concerns have adopted this bearing alloy.

**Friction Clutches.**—Carlyle Johnson Machine Co., Manchester, Conn. Booklet. Describes friction clutches as applied to machine building.

**Superheaters for Stationary Power Plants.**—Locomotive Superheater Co., 30 Church Street, New York. Bulletin T-6. Gives results of tests made before and after superheating equipment was installed in a power plant of the "Nickel Plate" Railroad.

**Industrial Buildings.**—J. G. White Engineering Corporation, 43 Exchange Place, New York. Bulletin with the title "Industrial Buildings at Matagorda." Describes and illustrates the power plant, warehouse, machine shop and model homes erected by this company for the housing of workmen at the sulphur plant of the Texas Gulf Sulphur Co., Matagorda, Texas.

**Flush Receptacles and Current Taps.**—Harvey Hubbell, Inc., Bridgeport, Conn. Illustrations and descriptions of current taps, attachment plugs, lamp receptacles, attachment plug caps, etc.

**Calendar.**—Wagner Electric Mfg. Co., St. Louis. Size 13 x 23 in. Bears three calendar pads showing past, present and the coming month. The calendar runs to and includes the month of May, 1921. An illustration shows application of small motors to coffee grinding, ice cream making, etc.

**Pulleys.**—Naylor Brothers, Peekskill, N. Y. Catalog. Gives price lists of standard single belt and double belt solid, split, clamp hub, tight and loose and flange pulleys, also prices of standardized extras.

**Small Electric Motors.**—Master Electric Co., Dayton, Ohio. Folder. Illustrates and describes motors built in fractional horsepower sizes from 1/10 to 1/2 hp. for alternating or direct current.

**Gas Producer.**—Wellman-Seaver-Morgan Co., Cleveland. Bulletin 51. Concerned with a mechanical gas producer. The design and principle of operation are explained and half-tones and drawings are included of the revolving chamber in which the fuel is decomposed, operating mechanism, a mechanical poker, fuel feed device, ash remover and blower. The operation of the producer is explained in detail and installation data, typical analysis of American coals, combustion data and other valuable information is included.

**Oil Circuit Breakers.**—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Leaflet. Illustrations and descriptions of a line of oil circuit breakers of various types with voltages as high as 25,000 and rated as high as 23,000 amperes. They are for indoor service, either manually or electrically operated, full automatic, non-automatic, single throw. Both the application and distinctive features are discussed and each leaflet contains a table, giving an outline of maximum current, voltage and interrupting capacity ratings of the circuit breakers listed therein.

**Steel Works Equipment and Coke Oven Machinery.**—Wellman-Seaver-Morgan Co., Cleveland, Ohio. Two bulletins. Bulletin 45 covers steel working equipment, including such items as Hughes mechanical gas producers and shut-off valves; open hearth, soaking pit and continuous heating furnaces; metal mixers, air and gas reversing valves, charging machines, cars and boxes, gantry cranes and special cranes for heavy work. Bulletin 46 is concerned with coke oven machinery, including coke pushers, coke levelers, door extractors, charging lorries, coke quenching and handling apparatus. The bulletins show a picture of a particular installation and a working blueprint of each machine.

# Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of *THE IRON AGE* under the general headings of "Iron and Steel Markets" and "Metal Markets."

| Iron and Soft Steel Bars and Shapes                                 |   | Per Lb.            |
|---|---|--------------------|
| Bars:   |   |                    |
| Refined iron, base price  | .....   | 5.25c.             |
| Swedish bars, base price  | .....   | 20.00c.            |
| Soft Steel:   |   |                    |
| $\frac{3}{4}$ to $1\frac{1}{2}$ in., round and square               | .....   | 3.52c. to 5.25c.   |
| 1 to 6 in. x $\frac{3}{8}$ to 1 in.                                 | .....   | 3.52c. to 5.25c.   |
| 1 to 6 in. x $\frac{1}{4}$ to 5/16                                  | .....   | 3.62c. to 5.25c.   |
| Rods— $\frac{3}{8}$ and $11/16$                                     | .....   | 3.57c. to 5.05c.   |
| Bands— $1\frac{1}{2}$ to 6 by 3/16 to No. 8                         | .....   | 4.22c. to 6.50c.   |
| Hoops   | .....   | 5.57c. to 6.57c.   |
| Shapes:   |   |                    |
| Beams and channels—3 to 15 in.                                      | .....   | 3.47c. to 5.25c.   |
| Angles:   |   |                    |
| 3 in. x $\frac{1}{4}$ in. and larger                                | .....   | 3.47c. to 5.25c.   |
| 3 in. x $3/16$ in. and $\frac{1}{8}$ in.                            | .....   | 3.72c. to 5.60c.   |
| $1\frac{1}{2}$ to $2\frac{1}{2}$ in. x $\frac{1}{8}$ in.            | .....   | 3.52c. to 5.90c.   |
| $1\frac{1}{2}$ to $2\frac{3}{4}$ in. x $3/16$ in. and thicker       | .....   | 3.47c. to 5.85c.   |
| 1 to $1\frac{1}{4}$ in. x $3/16$ in.                                | .....   | 3.52c. to 5.90c.   |
| 1 to $1\frac{1}{4}$ x $\frac{1}{8}$ in.                             | .....   | 3.57c. to 5.95c.   |
| $\frac{3}{8}$ x $\frac{3}{8}$ x $\frac{1}{8}$ in.                   | .....   | 3.62c. to 6.00c.   |
| $\frac{3}{8}$ x $\frac{1}{8}$ in.                                   | .....   | 3.67c. to 6.05c.   |
| $\frac{3}{8}$ x $\frac{1}{8}$ in.                                   | .....   | 4.07c. to 6.85c.   |
| $\frac{1}{2}$ x $3/32$ in.  | .....   | 5.17c. to 7.55c.   |
| Tees:   |   |                    |
| 1 x $\frac{1}{8}$ in.   | .....   | 3.87c. to 6.25c.   |
| $1\frac{1}{4}$ in. x $1\frac{1}{4}$ x $3/16$ in.                    | .....   | 3.77c. to 6.15c.   |
| $1\frac{1}{2}$ to $2\frac{1}{2}$ x $3/16$ in. and thicker           | .....   | 3.57c. to 5.95c.   |
| 3 in. and larger  | .....   | 3.52c. to 5.30c.   |
| Merchant Steel  | Per Lb.   |                    |
| Tire, $1\frac{1}{2}$ x $\frac{1}{2}$ in. and larger                 | .....   | 5.00c. to 5.25c.   |
| (Smooth finish, 1 to $2\frac{1}{2}$ x $\frac{1}{4}$ in. and larger) | .....   | 5.50c.             |
| Toe calk $\frac{1}{2}$ x $\frac{1}{8}$ in. and larger               | .....   | 6.00c.             |
| Cold-rolled strip (soft and quarter hard)                           | .....   | 12c. to 14c.       |
| Open-hearth spring steel  | .....   | 7.00c. to 10.00c.  |
| Shafting and Screw Stock:   |   |                    |
| Rounds  | .....   | 6.25c. to 7.00c.   |
| Squares, flats and hex.   | .....   | 6.75c. to 7.50c.   |
| Standard cast steel, base price                                     | .....   | 15.00c.            |
| Best cast steel   | .....   | 20.00c. to 24.00c. |
| Extra best cast steel   | .....   | 25.00c. to 30.00c. |
| Tank Plates—Steel   | Per Lb.   |                    |
| $\frac{1}{4}$ in. and heavier                                       | .....   | 3.67c. to 5.50c.   |
| Sheets  |   |                    |
| Blue Annealed   | Per Lb.   |                    |
| No. 10  | .....   | 7.12c. to 8.30c.   |
| No. 12  | .....   | 7.15c. to 8.35c.   |
| No. 14  | .....   | 7.22c. to 8.40c.   |
| No. 16  | .....   | 7.32c. to 8.50c.   |
| Box Annealed—Black  |   |                    |
| Soft Steel  |   |                    |
| C.R., One Pass  |   |                    |
| per lb.   |   |                    |
| Nos. 18 to 20   | .....   | 8.30c. to 9.90c.   |
| Nos. 22 and 24  | .....   | 8.35c. to 9.85c.   |
| No. 26  | .....   | 8.40c. to 9.90c.   |
| No. 28  | .....   | 8.50c. to 10.00c.  |
| No. 30  | .....   | 8.60c. to 10.10c.  |
| Wood's  |   |                    |
| Refined,  |   |                    |
| per lb.   |   |                    |
| No. 28, 36 in. wide, 10c. higher                                    | .....   |                    |
| Wood's  |   |                    |
| Refined,  |   |                    |
| per lb.   |   |                    |
| 8.75c. to 10.50c.   |   |                    |
| 9.00c. to 10.75c.   |   |                    |
| 9.15c. to 10.90c.   |   |                    |
| 9.30c. to 11.05c.   |   |                    |
| 9.45c. to 11.20c.   |   |                    |
| 9.60c. to 11.35c.   |   |                    |
| 9.75c. to 11.50c.   |   |                    |
| 10.25c. to 12.00c.  |   |                    |
| No. 28, 36 in. wide, 20c. higher                                    | .....   |                    |
| Wood's  |   |                    |
| Refined,  |   |                    |
| per lb.   |   |                    |
| 8.75c. to 10.50c.   |   |                    |
| 9.00c. to 10.75c.   |   |                    |
| 9.15c. to 10.90c.   |   |                    |
| 9.30c. to 11.05c.   |   |                    |
| 9.45c. to 11.20c.   |   |                    |
| 9.60c. to 11.35c.   |   |                    |
| 9.75c. to 11.50c.   |   |                    |
| 10.25c. to 12.00c.  |   |                    |
| Pipe  |   |                    |
| Standard—Steel  |   |                    |
| Blk. Galv.  |   |                    |
| $\frac{1}{2}$ in. Butt... —36 —19                                   | 3 $\frac{1}{2}$ -1 $\frac{1}{2}$ in. Butt. —5 —15 |                    |
| $\frac{3}{4}$ -3 in. Butt. —40 —24                                  | 2 in. Lap... +1 +19                               |                    |
| 3 $\frac{1}{2}$ -6 in. Lap. —35 —20                                 | 2 $\frac{1}{2}$ -6 in. Lap. —1 +15                |                    |
| 7-12 in. Lap. —25 —8  | 7-12 in. Lap. +10 +28                             |                    |
| Wrought Iron  |   |                    |
| Blk. Galv.  |   |                    |
|   |   |                    |

| Steel Wire                            |       | Per lb. |
|---------------------------------------|-------|---------|
| BASE PRICE* ON NO. 9 GAGE AND COARSER |       |         |
| Bright basic                          | ..... | 8.00c.  |
| Annealed soft                         | ..... | 8.00c.  |
| Galvanized annealed                   | ..... | 8.50c.  |
| Coppered basic                        | ..... | 8.50c.  |
| Tinned soft Bessemer                  | ..... | 10.00c. |

\*Regular extras for lighter gages.

## Brass Sheet, Rod, Tube and Wire

| BASE PRICE       |       |  |
|------------------|-------|--|
| High Brass Sheet | ..... | 28 $\frac{1}{4}$ c. to 29 $\frac{1}{4}$ c. |
| High Brass Wire  | ..... | 28 $\frac{1}{4}$ c. to 29 $\frac{1}{4}$ c. |
| Brass Rod        | ..... | 26 $\frac{3}{4}$ c. to 29 c.               |
| Brass Tube       | ..... | 42 $\frac{1}{2}$ c. to 44 $\frac{1}{2}$ c. |

## Copper Sheets

Sheet copper, hot rolled, 24 oz., 29 $\frac{1}{2}$ c. per lb. base. Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

## Tin Plates

| Bright Tin        | COKE—14x20            |
|-------------------|-----------------------|
| Grade "AAA"       | Primes Wasters        |
| Charcoal Charcoal | 80 lb... 11.80 11.55  |
| 14x20             | 90 lb... 11.90 11.65  |
| IC... \$16.50     | 100 lb... 12.00 11.75 |
| IX... 18.75       | IC... 12.25 12.00     |
| IXX... 20.50      | IX... 13.25 13.00     |
| IXXX... 22.25     | IXX... 14.25 14.00    |
| IXXXX... 23.75    | IXXX... 15.25 15.00   |
|                   | IXXXX... 16.25 16.00  |

## Terne Plates

| 8 lb. Coating 14x20 |        |
|---------------------|--------|
| 100 lb.             | \$9.35 |
| IC                  | 9.50   |
| IX                  | 10.50  |
| Fire door stock     | 12.75  |

## Tin

|             |       |              |
|-------------|-------|--------------|
| Straits pig | ..... | 53c.         |
| Bar         | ..... | 58c. to 60c. |

## Copper

|              |       |                     |
|--------------|-------|---------------------|
| Lake ingot   | ..... | 20c.                |
| Electrolytic | ..... | 19 $\frac{1}{2}$ c. |
| Casting      | ..... | 19 $\frac{1}{4}$ c. |

## Spelter and Sheet Zinc

|                               |       |                               |
|-------------------------------|-------|-------------------------------|
| Western spelter               | ..... | 10c. to 11c.                  |
| Sheet zinc, No. 9 base, casks | ..... | 14 $\frac{1}{2}$ c. open 15c. |

## Lead and Solder\*

|   |       |                            |
|---|-------|----------------------------|
| American pig lead                                 | ..... | 9 $\frac{1}{2}$ c. to 10c. |
| Bar lead  | ..... | 11c. to 12c.               |
| Solder $\frac{1}{2}$ and $\frac{1}{2}$ guaranteed | ..... | 38c.                       |
| No. 1 solder                                      | ..... | 35c.                       |
| Refined solder                                    | ..... | 31c.                       |

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

|                           |       |      |
|---------------------------|-------|------|
| Best grade, per lb.       | ..... | 90c. |
| Commercial grade, per lb. | ..... | 50c. |

## Antimony

|         |       |             |
|---------|-------|-------------|
| Asiatic | ..... | 9c. to 10c. |
|---------|-------|-------------|

## Aluminum

|   |       |              |
|---|-------|--------------|
| No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. | ..... | 35c. to 38c. |
|---|-------|--------------|

## Old Metals

There has been a little better feeling in the market this week, and values have been slightly firmer. Dealers' buying prices are as follows:

|   |       | Cents per lb. |
|---|-------|---------------|
| Copper, heavy and crucible              | ..... | 16.00         |
| Copper, heavy and wire                  | ..... | 15.00         |
| Copper, light and bottoms               | ..... | 13.00         |
| Brass, heavy                            | ..... | 10.00         |
| Brass, light                            | ..... | 7.25          |
| Heavy machine composition               | ..... | 15.25         |
| No. 1 yellow brass turnings             | ..... | 9.50          |
| No. 1 red brass or composition turnings | ..... | 12.25         |
| Lead, heavy                             | ..... | 7.00          |
| Lead, tea                               | ..... | 5.00          |
| Zinc                                    | ..... | 5.25          |

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# THE IRON AGE

Established 1855

NEW YORK

July 8, 1920

## DRESSLER CONTINUOUS ANNEALING FURNACE

Tin Plate Sheets  
Wire Castings  
Malleables Tubes

Anneal with  
110 lbs. of coal  
per ton



### BUILT AND BUILDING FOR

AMERICAN SHEET & TIN PLATE CO.  
Shenango and Gary Plants  
JONES & LAUGHLIN STEEL CO.  
Woodlawn, Pennsylvania  
FOLLANSBEE BROS. CO. - - - Toronto, Ohio

SAGINAW MALLEABLE IRON CO.  
Saginaw, Michigan  
NATIONAL MALLEABLE CASTINGS CO.  
Cleveland, Ohio  
WHITAKER-GLESSNER CO.,  
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**AMERICAN DRESSLER TUNNEL KILNS, Inc.**  
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TABLE OF CONTENTS - - - 91

Buyers Index Section..... 451  
Wanted Section..... 430

ADVERTISING INDEX - - - 478

Contract Work Section..... 440  
Help and Situations Wanted..... 436

Business Opportunities..... 433  
Clearing House Section..... 376

# KOPPERS COKE OVENS

IN OPERATION OR UNDER CONSTRUCTION  
IN THE UNITED STATES AND CANADA  
HAVE AN AGGREGATE ANNUAL  
CARBONIZING CAPACITY OF MORE THAN

## 43,000,000 NET TONS OF COAL

| Owner or Operator                     | Location               | Number of Ovens |
|---------------------------------------|------------------------|-----------------|
| United States Steel Corporation       |                        |                 |
| Illinois Steel Company                | Joliet, Ill.           | 280             |
| Illinois Steel Company                | Gary, Ind.             | 700             |
| Tennessee Coal, Iron & R. R. Company  | Fairfield, Ala.        | 434             |
| Minnesota Steel Company               | Duluth, Minn.          | 90              |
| Carnegie Steel Company                | Clairton, Pa.          | 768             |
| American Steel & Wire Company         | Cleveland, O.          | 180             |
| National Tube Company                 | Lorain, O.             | 208             |
| Woodward Iron Company                 | Woodward, Ala.         | 170             |
| Coal Products Mfg. Company            | Joliet, Ill.           | 35              |
| Algoma Steel Corporation, Ltd.        | Sault Ste. Marie, Ont. | 110             |
| Inland Steel Company                  | Indiana Harbor, Ind.   | 130             |
| Republic Iron & Steel Company         | Youngstown, O.         | 143             |
| Bethlehem Steel Company               | Sparrows Point, Md.    | 360             |
| Bethlehem Steel Company               | South Bethlehem, Pa.   | 424             |
| Bethlehem Steel Company               | Steelton, Pa.          | 60              |
| Laclede Gas Light Company             | St. Louis, Mo.         | 56              |
| Cambria Steel Company                 | Johnstown, Pa.         | 92              |
| Toledo Furnace Company                | Toledo, O.             | 94              |
| Youngstown Sheet & Tube Company       | Youngstown, O.         | 306             |
| LaBelle Iron Works                    | Follansbee, W. Va.     | 94              |
| United Furnace Company                | Canton, O.             | 47              |
| River Furnace Company                 | Cleveland, O.          | 204             |
| Brier Hill Steel Company              | Youngstown, O.         | 84              |
| Gulf States Steel Company             | Gadsden, Ala.          | 37              |
| Seaboard By-Product Coke Company      | Jersey City, N. J.     | 165             |
| Minnesota By-Product Coke Company     | St. Paul, Minn.        | 65              |
| Colorado Fuel & Iron Company          | Pueblo, Colo.          | 120             |
| Indiana Coke & Gas Company            | Terre Haute, Ind.      | 30              |
| Dominion Iron & Steel Company, Ltd.   | Sydney, N. S.          | 180             |
| Providence Gas Company                | Providence, R. I.      | 40              |
| Jones & Laughlin Steel Company        | Pittsburgh, Pa.        | 300             |
| Rainey-Wood Coke Company              | Swedeland, Pa.         | 110             |
| Birmingham Coke & By-Products Company | Birmingham, Ala.       | 50              |
| Donner Union Coke Corporation         | Buffalo, N. Y.         | 150             |
| Domestic Coke Corporation             | Fairmont, W. Va.       | 60              |
| Pittsburgh Crucible Steel Company     | Midland, Pa.           | 100             |
| Chicago By-Product Coke Company       | Chicago, Ill.          | 100             |

# THE KOPPERS COMPANY

PITTSBURGH, PA.

BUILDERS OF BY-PRODUCT COKE PLANTS

# THE IRON AGE

New York, July 8, 1920

ESTABLISHED 1855

VOL. 106: No. 2

## Temperature Ranges in Hardening Steel

Comparison of Scleroscopic Results and Hardening Temperatures—Effect of Overheating and Enlargement of the Grain

BY CARL T. HEWITT.\*

IT is a well-known fact that when carbon tool steels are heated for hardening, there is a limited range of temperatures within which the steel will emerge from the quenching bath with the proper refined grain. A small decrease from this range will result in a tool being entirely soft, or having soft spots, or having only a thin surface hardening which is not sufficiently deep for the work it is intended to do. On the other hand, as the temperatures are increased over the proper hardening range, the grain of the steel commences to open up or, in other words, the size of the separate grains of the steel increases. This increase in grain size is very rapid as the temperature is increased and results in a corresponding diminution of strength and toughness.

To find out the effect of this overheating and consequent enlarging of the grain size on the scleroscopic hardness of the steel, as well as the effect of not enough heat, a bar of  $\frac{1}{2}$ -in. round tool steel of a standard make and having the following analysis was cut up into lengths of one inch:

| Per Cent            | Per Cent |
|---------------------|----------|
| Carbon . . . . .    | 1.28     |
| Manganese . . . . . | 0.215    |
| Silicon . . . . .   | 0.16     |

| Per Cent             | Per Cent |
|----------------------|----------|
| Sulphur . . . . .    | 0.027    |
| Phosphorus . . . . . | 0.025    |

These pieces were then milled flat on two opposite sides, and ground to make the faces parallel. The pieces when ready for hardening were about  $\frac{5}{16}$ -in. thick. These were numbered consecutively on the ends for identification, and 12 were very carefully heated to the temperatures indicated below and quenched in a saturated brine solution which was at 50 deg. Fahr. The temperatures in Fahrenheit degrees used were 1380, 1400-20-40-60-80, 1500-20-40-60-80, 1600.

The furnace used was a small gas-fired furnace, semi-muffle type, and to insure proper temperature control, a Brown platinum-rhodium couple pro-

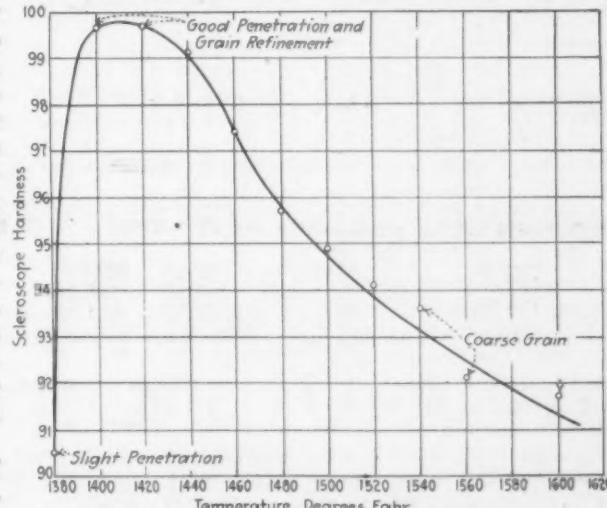
ected by a quartz tube only was used. This was placed in such a manner that the test piece was very close to the end of the couple, making it easy to compare the two. The furnace in every case was brought up to the temperature required before the test piece was put in and each piece was given time to attain the proper temperature and then allowed to soak a few minutes to insure the heat having penetrated through to the center and the transformation of the steel complete. They were then quenched quickly into the brine and allowed to cool down completely.

Each piece was then carefully ground on both sides to remove any possible decarbonization and remedy any warping which might have occurred in the quenching. The scleroscopic readings were taken on a new type indicating instrument, doing away with the element of chance so apt to occur with the old style bulb instrument. The scleroscope was carefully tested with the standard blocks and found to be correct.

To obtain as accurate and average results as possible, 20 readings were taken on each side of each piece, as shown below; then the averages of the two sides were averaged for the final record. Thus 40 indications entered into the final reading.

A curve was plotted with the results obtained, using scleroscopic numbers for ordinates and temperatures for abscissa. The resulting curve is quite regular in form and shows a maximum hardness at temperatures of 1400 deg. Fahr. with a rapid falling off as the temperature is increased. At 1380 deg. Fahr. the reading of 90.5 indicates a surface hardening only, as is to be expected, although the Ac point is considerably below this temperature. Only very small tools or thin sections will harden satisfactorily at temperatures less than 50 deg. Fahr. above the Ac point, and this allowance must be increased as the size of the tool increases.

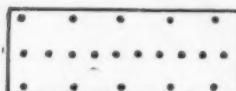
The curve shows that it is safe to harden tools



Relation of Scleroscopic Hardness and Hardening Temperatures in Degrees Fahrenheit Plotted as a Result of Forty Tests. Samples were quenched from temperatures indicated into brine at 50 deg. Fahr. and not drawn

\*Metallurgist, Fafnir Bearing Co., New Britain, Conn.

of not less than 5/16-in. cross section at temperatures as high as 100 deg. Fahr. above the Ac point



Location of the Ten Spots in Each Side of the Test Piece

without danger of opening up the grain enough to weaken the steel. This statement is presum-

ing that the steel is not allowed to soak longer than necessary for thorough heating, as continued heating at a proper temperature will eventually open up the grain with similar, if not as decided, results as overheating.

None of the test pieces showed any signs of cracking or checking, except the one quenched at 1600 deg. Fahr. which showed a crack on one side running its full length.

## Co-ordination of Sales and Production

### Meeting Under Auspices of Taylor Society Considers Application of Scientific Methods. Mr. Freeland Tells of Plans of the Winchester Company

A CONFERENCE of sales executives was held Friday, June 25, at the Engineering Societies Building, New York, under the auspices of the Taylor Society, to consider planning and control in sales departments. The meeting was called on account of the adoption at the Rochester meeting of the Taylor Society last May of a resolution requesting the society to call a meeting, within 90 days, of managers especially interested in the application of scientific methods to sales operations. About 100 were in attendance.

The president of the society, Henry S. Dennison, president the Dennison Mfg. Co., Framingham, Mass., presided, and briefly discussed the general subject of "Co-ordination of Production and Salesmanship," pointing out the highly unsatisfactory results if the two departments of a company do not act in harmony. He said that the question is as to how far Taylor principles, which had been applied in the factory, could be applied to the selling problem.

W. E. Freeland, sales engineer Winchester Repeating Arms Co., New Haven, Conn., spoke on "Co-ordination of Sales with Scientific Production." He said that the Winchester company had about 22,000 employees at the time of the armistice, which declined in a short time to 7000. The plant had been enlarged to four times its size in 1914, and the great problem was how to use it and increase the number of employees. There is, he said, interdependence of sales and production—neither can control, absolutely, if business is to prosper. There must be adjustment of manufacturing facilities and market demands. The obligation of sales includes the duty to discover new sales and new markets, to resist efforts to break down mass production and to expand seasonal or territorial limitations, while the obligation of production includes the maintenance of delivery schedules and the improving of the quality of product. In sales engineering there must be a master-planning group, to plan future projects in sales engineering and current projects in sales production. There should be an alliance of sales engineering and advertising in planning work. The elements of a master plan include necessity for contact with all parts of organization, study of markets and consumer demand, study of economic trends, study of factory facilities, present and potential, selection of lines to be manufactured, determination of elements of problems and of their proper sequence in order of work, allocation of work to various divisions of organization and clear determination of bounds to prevent overlapping of work. Sales engineering in increasing production involves interpretation of basic statistics and field surveys to determine new products to be added, new markets, new uses for old products, refinement of products, reactions of dealers and consumers toward products and selling methods, seasonal demands, territorial demands, price changes and trends, competitive activities, packing and shipping methods. Mr. Freeland also spoke of special research work and of approval of models and packing of new products as parts of sales engineering work. Sales engineering as related to advertising includes merchandising studies, technical information for all advertising or publicity,

field or advisory service of all kinds, reports of all seasonal or territorial variations in consumer demands. Sales engineering as related to warehouse requirements includes collecting information as to initial sales requirements on new products, early information of unusual demands or trends, interpretation of basic statistics, field surveys or engineering service on request.

"Sales engineering as related to manufacturing engineering," said Mr. Freeland, "includes specifications of new products, standardization of lines, specifications for packing methods, specifications for marking products, procurement of competitors' products as samples, determination of proper sequence of work when projects conflict, advisory service in development of new products, procurement of field tests of new products; specific reports on initial quantities, peak load periods, probable expansion of demand, market reactions toward products, etc.; study and analysis of suggested new products, field research work of any kind when requested, approval of models of new products, interpretation of consumer demands and buying habits, attitude toward products, etc." Mr. Freeland gave an interesting example of how the number of models of a product can be reduced. A competitor of the Winchester company, manufactures 6000 kinds of pocket knives, but the Winchester company believes it is meeting the real demand in the manufacture of 129 kinds.

John M. Bruce, of Webb, Kendall & Bruce, consulting engineers, New York, spoke on "Control of Selling Operations, Based on Analysis of the Salesman's Job." He spoke of the tremendous waste which results from what he called "sales sloppiness." The salesman, he said, instead of exercising real salesmanship and trying to satisfy customers by giving them what he has to sell, promises something special. This results in multiplicity of models, which he denounced as wicked. He cited the case of a sewing machine company which has a standard product which ought to meet every demand, but as a matter of fact this machine represents only 40 per cent of the business of the company, and to satisfy the whims of customers many other models are being turned out. He referred to what he thought was the immoral sales program of a leading manufacturer of food products as an example of how not to do business. He said that the principal difference in men, after allowing reasonable energy and ability, is in their imagination. Some men are willing to work for a goal 25 years distant, while some must have the goal directly in front of them. He said that the reason golf is so successful is that there are 18 holes, giving a chance for 18 victories. If a man doesn't succeed in the first hole, there are 17 other chances for him to make a low score.

E. St. Elmo Lewis, of the Campbell-Ewald Co., New York, spoke in terms of high praise of Mr. Freeland's address and briefly discussed it and also Mr. Bruce's remarks, especially of the moral obligation of the seller to the ultimate consumer and of the importance of standardization in manufacture to prevent waste.

A luncheon followed the morning program and the afternoon program was a general free-for-all discussion of the subject of the day.

# Agreement with Amalgamated Is Renewed

## Mutual Concessions Made by Manufacturers and Representatives of the Union—Much Discussed Memorandum of Last Year Remains Unchanged

COLUMBUS, OHIO, July 1.—A compromise of the sheet and tin plate manufacturers operating their plants under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers and the representatives of that association was agreed to in the settlement arrived at here this afternoon after a conference lasting more than three days. By the terms of the settlement the memorandum of agreement of the 1919-20 scale was readopted, including the much disputed clause covering the organization of workmen not covered by the agreement into which the association attempted to put teeth and which the manufacturers sought to eliminate entirely. The manufacturers agreed to put on one extra man on all sheet mills, but the association demand of an increase of 20 per cent in wages, subsequently reduced to 10 per cent, was refused, and the addition of one man to each mill crew means that in a number of mills where two extra men have been employed, one will be dropped.

Moreover, the amendment to the Amalgamated constitution which provided for a penalty on any member of a crew who worked short-handed was modified in the conference, so that the crews can work short-handed by agreement and the absence of the new extra man, who is called a spell man, or any man of a crew shall not be regarded as a shortage of crew. This is important to the employers for the reason that hitherto, the absence of a member of the crew has been sufficient reason for the entire crew to quit work for the day. Under the change, it will be possible to operate a mill with a short crew merely by a shift in the character of the material or work upon which the mill may be engaged. The only wage concession granted was one of 10 per cent on all orders which are to be blue annealed in the sheet or open furnaces.

### Slight Advance Granted

The association demand for an increase of 20 per cent in the tin mill percentage of slide changes was compromised. Under the 1919-20 scale, the workmen in the tin plate mills received 1 per cent above the base rate for each 5c. advance above \$3.50 per base box; under the new scale, the men will receive 1½ per cent increase for each 5c. advance above \$3.50 per base box. It is figured that this increase is equivalent to approximately 9¾ per cent on the 1919-20 wage scale. The manufacturers concurred in the association demand that "when 27 or 28 gage material is doubled twice, the same price shall be paid to the doubler and heater as is paid for 29 and 30 gage." It also was agreed to by the manufacturers that they provide one extra man on the tin mills to help the catcher and perform other such duties as may be decided upon by the management and the mill committee. But this change is accompanied by a reduction in the wages of the catcher of 10 per cent, and the absence of the extra man is not to be regarded as a shortage of crew. When one cut is to be made on tin mills over 48 in. long the company shall furnish extra help.

As a result of the addition of a new extra man on all sheet mills, the old memorandum was modified to the extent that on mills rolling sheets 36 in. wide and over, containing 22 sq. ft. or more, and doubled, where the old memorandum called for two extra men, only one extra man will be allowed under the new agreement, while on mills doing similar work, but not

doubling, the extra man called for in the old arrangement is eliminated and the extra man allowed on mills rolling bars of 55 lb. and heavier also is eliminated. It is estimated that the increase of mill crews will mean an increase of about \$1.50 per ton to the rolling costs, but this is by no means general, as a number of plants have been working for some time with the extra man.

### Memorandum Continued

The clause in the 1919-20 memorandum of agreement covering the organization of unorganized workmen in the mills, around which a real dispute grew up and which caused the adjournment of the conference in Atlantic City last month, will be part of the 1920-21 agreement without change of wording. Manufacturers refused to accede to the association's demands in connection with this clause, for to have agreed to them, it is declared, would have impaired the effectiveness of the general agreement. It is explained that the demands would have made it possible for a strike by members of the Amalgamated Association in the event that employers rejected the local scale presented by some newly organized lodge. If, for example, the workmen in a coal pulverizing plant of one of the mills organized and received a charter from the Amalgamated Association, for which, by the way, only 10 names are necessary, and their scale was rejected, this would be sufficient ground for the calling out of all Amalgamated members in the plant or plants of the company refusing to negotiate with the new body. Manufacturers contended that if the general agreement was to be affected by disputes over local scales, the clause should be entirely eliminated. Their reason for being content to allow it to stand in the new agreement probably is that it gives assurance of fulfillment of obligations by the Amalgamated Association.

### Spirit of Moderation Prevails

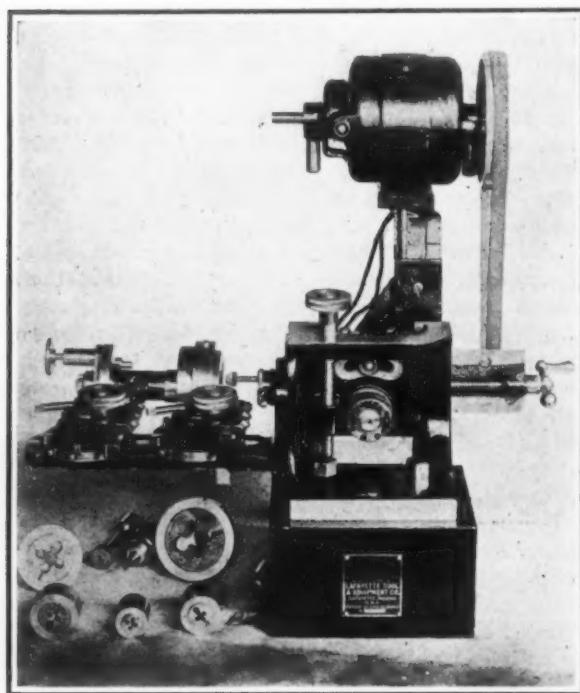
It was evident at the conference here, despite the strong fight which the association representatives waged for the change in this clause and for wage increases in the sheet and tin plate mills, that calm consideration of the questions at issue since the adjournment of the Atlantic City meeting and possibly the attitude of the members of the organization, had made them more moderate. The bar mill wage scale was increased 15 per cent at Atlantic City. The tin plate mill workmen get an increase of slightly under 10 per cent, while the sheet mill workmen gained nothing except a lightening of labor through the increase in the mills crews. The word went forth from President M. F. Tighe of the Amalgamated Association on Tuesday that the members should stay at work pending the termination of the conference. Interruption to sheet, tin and bar mill operations has been averted, save in the case of some of the tin plate mills, owners of which had previously decided to close down in the expectation that an agreement could not be reached.

At the conference in this city there were 35 representatives of manufacturers, from 16 different companies and 17 Amalgamated representatives, including 14 conferees and three officials. A. N. Flora, vice-president Trumbull Steel Co. at Warren, Ohio, and president of the Western Sheet and Tinplate Manufacturers' Association, presided at the Columbus sessions, while M. F. Tighe, president of the Amalgamated, had presided at Atlantic City.

## Universal Grinder and Button Die Grinding Attachment

The accompanying illustration shows the universal grinder and button die grinding attachment manufactured by the Lafayette Tool & Equipment Co., Lafayette, Ind., with general sales office at 21 South Twelfth Street, Philadelphia. Features emphasized for the grinder are adaptability for grinding precision threads and accuracy of the spindle. The spindles and wheel holding devices are interchangeable, thus permitting of keeping on hand wheels shaped and mounted for various grinding operations. Any wheel, it is stated, as soon as it is placed on the grinder is instantly available for grinding without retrueing. These results, it is explained, are attained by grinding the threads as well as the remainder of the spindle.

The grinder is not limited to internal or thread



Universal Grinder and Grinding Attachment for Reclaiming Button Dies

gage grinding but may be utilized for cylindrical grinding, taper grinding and with the use of the relieving attachment on a lathe, will relieve taps, cutters, etc., after hardening. It can be attached to the lathe, milling machine, shaper or planer and may be used as a bench grinding machine.

The grinding attachment for reclaiming button dies, consists of an index plate, set of nine die holders to accommodate A. S. M. E. standard and fractional dies, graduated adjustable feeding mechanism for rack work holder, chuck, grinding wheel adaptors and grinding wheels or pencils. The work is held in the die holder controlled by the index plate, which can be set to accommodate the various width of flutes on dies to be ground. The index plate is drilled for three and four grooved dies.

The universal grinder is driven by a General Electric universal motor which is equipped with a 5-ft. cord and plug. The equipment includes a graduated wheel truing attachment, one diamond tool, two standard wheel adaptors, one 2-in. internal wheel adaptor, one 4-in. internal wheel adaptor, and six Norton aluminum wheels ranging in diameter from  $\frac{3}{8}$  in. to 4 in. The net weight of the grinder is 45 lb.

### Leather Belting Film Story

A four-reel motion picture, showing the processes of belt making has been prepared by the Charles A. Schieren Co., maker of Duxbak leather belting. The graphic story takes one first through the various stages of treating the raw hides, then goes into details of

preparing tannic acid and treating the hides therewith, next shows the preparation and selection of leather for belting and finally covers the many operations necessary to make leather belting of required stock sizes. The film story is worthy of special note because of its completeness; no phase of leather-belt manufacture is neglected and accordingly in the three-quarters of an hour or so required to show the picture one can obtain a very clear conception of how and of what belts are made. The film has been produced for exhibition in the various plants and sales offices of the Schieren company and before technical society and club meetings and other organizations that may be interested in a complete story of leather-belt manufacture.

### Saving Coal in New England

Many New England industries, because of their fast diminishing supply of coal, closed Friday afternoon, July 2, and remained so until Tuesday morning, July 6. In a few instances, where iron and steel play an important part in their finished product, companies contemplate wholesale vacations or stock takings this month, because of the scarcity of fuel and raw materials. All industries are not as short of fuel as newspaper reports indicate, experience during the past winter having had its lesson. The general situation, nevertheless, is unfavorable, and especially in regard to the New York, New Haven & Hartford Railroad and some of the other New England carriers.

One railroad in this section of the country, consuming 6000 tons of bituminous coal daily, has less than 47,000 tons in storage and is confiscating much of the coal coming through gateways. Another carrier recently has borrowed coal from five manufacturing establishments. James J. Storrow, New England Fuel Administrator, has been unsuccessful in getting coal through, because, it is said, the railroads ignore the Interstate Commerce Commission's ruling on priority orders for New England.

### A New Molybdenum Company

The Molybdenum Corporation of America, having the same executive and operative personnel as that of the Electric Reduction Co., announces that it has acquired as of July 1, 1920, the plant, equipment and operations of the Electric Reduction Co. at Washington, Pa., together with extensive molybdenum mines in New Mexico. This company will continue to furnish ferrotungsten, ferromolybdenum and other ferroalloys, metals and chemical products as heretofore furnished by the Electric Reduction Co.

The Hyman Supply Co., Wilmington, N. C., is completing an extension to its three-story building on Front Street, with new offices and new warehouse buildings, preparatory to putting in a complete jobbing stock of heavy and shelf hardware in addition to its already large stock of mill and machinery supplies. The company has been in the mill supply and machinery business for a number of years, and has five salesmen from its Wilmington house, and covers practically all of eastern North Carolina and South Carolina territory, and will at an early date put on several more hardware salesmen. It will do strictly a jobbing business and no retail department will be connected with the business. Orders for hardware are now being placed.

Thomas R. Heywood, Jr., of the Thos. R. Heywood Co., Pittsburgh, is president of the recently organized Heywood Minerals Co., Inc., which has taken over the Twin Chimney and Dean fluorspar mines near Lexington, Mercer Co., Ky. The company, which has been organized under Kentucky laws, has a capital of \$125,000 and will have general offices at Nicholasville, Ky., and sales office in Pittsburgh. A mill now is under construction and the company expects to be producing 50 tons of fluorspar daily by the middle of August. Other officials of the company are J. H. Marriott, Nicholasville, Ky., vice-president and general manager, and H. G. Smith, Pittsburgh, is secretary and treasurer.

## MORE TROUBLE EXPECTED

### End of Transportation Difficulties Not Reached —Serious Shortage of Equipment

YOUNGSTOWN, OHIO, July 5.—That the disorganization and inadequacy of transportation will impose serious hardships on iron and steel operations and force pronounced curtailments is the belief of leading producers in the Middle West. Throughout the first half of the year, producers labored under adverse shipping conditions, both the inbound movement of raw materials and the outbound flow of finished and semi-finished product being checked. While some inroads have been made by the carriers into accumulated tonnage, there is still a large quantity in mill yards. Embargoes and priority rulings have further restricted movements of iron and steel products. A drastic embargo on the New York Central lines to Buffalo, North Tonawanda, Black Rock and other points east has checked shipments of steel and steel products from the Valleys to the seaboard via this route.

All indications point to continued operating difficulties during the fall and winter. Shortage of equipments of both cars and motive power and the inadequacy of switching and terminal facilities are largely

responsible for this condition. While production in the Youngstown district is now more uniformly normal than at any time in the past six months, officials realize that the diversion of gondola and other type cars for shipment of coal to the Northwest is likely and will interfere with the industry. Strict compliance with the Interstate Commerce Commission's ruling with respect to the loading of cars destined for the coal mines would have an immediate effect on operations, say managers. This ruling prohibits the use of gondola cars with sides above 36 in. in height for loading of any commodity not going in direction of the mines.

Failure to completely enforce this prohibition has enabled the mills to continue outbound shipments and to maintain shipments of limestone and slag. It is claimed by leading Valley interests that the promulgation has partially defeated its own ends by preventing the most expeditious handling of ore boats at the Lake docks. Concentration of empties at the mines has interfered with coal shipments, with the result that some of the boats have been held for several days, waiting for coal.

Makers in the Valleys are prepared for any emergency which may arise by reason of a rigid enforcement of the priority ruling, which would force an immediate curtailment.

### Permits Required for Shipments in Chicago

As was briefly noted in the Chicago iron and steel market letter last week, the Chicago railroad terminal committee issued an order, effective July 1, barring the acceptance of carload freight originating and destined to points within the Chicago switching district, except on permit issued by an Intra-Terminal Permit Committee. This action was taken for the purpose of clearing up the congestion on Chicago lines and is coupled with the request that every shipper or receiver of freight do his utmost to see to it that cars are loaded or unloaded promptly. To the end that some of the burden of freight movement may be assumed by motor trucks, the automobile division of the Chicago Association of Commerce, C. R. Dashiell, chairman, is working on the problem of systematizing truck traffic. It is hoped that the city's fleet of 9000 motor trucks may be pressed into service, and it is thought probable that a motor truck terminal, similar to one now in existence in Minneapolis, will be established, where shippers can take their goods and find out the exact schedule of charges. The need for bills of lading and insurance for goods in transit by motor truck is also being looked into. So far as scrap, mill and blast furnace products are concerned, the motor truck, because of its limited capacity, will prove of little assistance.

### Stocks of Coal Decreased

WASHINGTON, July 6—Returns from the questionnaire sent out by the Geological Survey to coal consumers show that stocks of coal on hand were considerably decreased between Feb. 29 and May 31. The reports have been summarized by the Survey by States for representative industrial plants and for coal gas plants and electric utility plants. Nation-wide totals on steel and by-product coke plants have not yet been made public.

The returns from 2486 industrial plants throughout the country show that on Feb. 29 their total stocks of bituminous coal on hand amounted to 3,859,309 tons, while on May 31 the total was 3,389,066 tons. At these plants using 1,004,240 tons weekly, the supply on hand on Feb. 29 was sufficient to last for three weeks and six days, and that on hand on May 31 for three weeks and three days.

Three hundred and fifty representative electric utility plants with a weekly consumption of 398,656 tons reported stocks on Feb. 29 amounting to 1,324,368 tons, and on May 31 to 1,372,880 tons. In the case of this class of consumers their stocks were slightly

greater on the latter date, the supply on Feb. 29 being sufficient for a period of three weeks and two days, and on May 31 for a period of three weeks and three days.

One hundred and twenty-six representative coal gas plants with a weekly consumption of 72,272 tons reported that they had on hand 320,197 tons on Feb. 29 and 228,805 tons on May 31. The stocks of this class of consumers fell off from enough to last four weeks and three days on Feb. 29 to only enough for three weeks and one day on May 31.

### Imports of Ferromanganese and Manganese Ore Heavy in May

Ferromanganese imports in May were 3981 gross tons, or the largest for any month in the last year and a half. The imports for the 11 months ended May 31, 1920, have been 33,279 tons as against 22,206 tons to May 31, 1919.

Manganese ore imports were also heavy in May at 56,586 tons. These are the heaviest imports for any month this year, and bring the total to May 31 to 243,572 tons as compared with 440,902 tons to May 31, 1919.

### Foundry Exhibit at Columbus

Exhibit space for the foundry and machine exhibition which will be conducted in connection with the foundrymen's conventions at Columbus, Ohio, Oct. 4-8 inclusive, by the American Foundrymen's Association and the metals division of the American Institute of Mining and Metallurgical Engineers, was on July 1 within less than 9000 sq. ft. of the total space used at the Philadelphia exhibit last year. The total number of applications to date is 141 and the total amount of space 51,000 sq. ft. C. E. Hoyt, secretary-treasurer American Foundrymen's Association, whose headquarters are at 140 South Dearborn Street, Chicago, expects to mail to exhibitors on July 15 the layout of floor space.

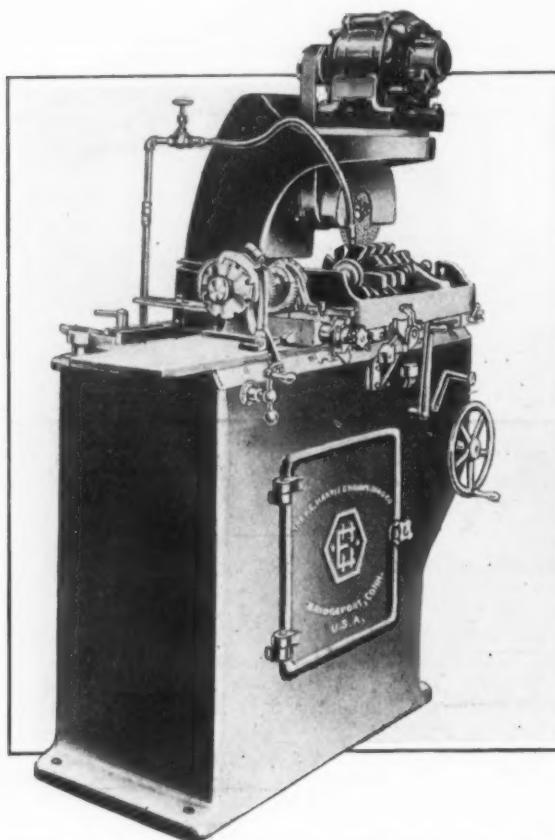
The American Seeding Machine Co., which has sold its plant at Richmond, Ind., to the International Harvester Co. of America, has given its employees a bonus, amounting to \$20,000, as testimony to their loyalty and efficiency. About 600 employees will participate, according to length of service.

The Engineers' Club of the Youngstown District will hold its annual outing July 10 at the Milton Reservoir, Mahoning County.

### Automatic Hob Grinding Machine With Unit Motor Drive

In answer to a demand for a motor-driven type of automatic hob grinding machine, the H. E. Harris Engineering Co., Bridgeport, Conn., has developed a machine known as the No. 815M, shown in the accompanying illustration. The motor for driving the wheel spindle is mounted above and upon a circular horizontal slide. The wheel head is mounted below and upon the same slide. The drive from motor spindle to wheel spindle is by an endless belt, the slack in the belt being taken up by raising the motor itself. This motor does no work except to drive the spindle so that no sudden torques from reversing or indexing affect it. The weight of the motor is emphasized as adding to the stability of the machine and as aiding in absorbing vibration.

The cutting face of the grinding wheel coincides



Harris No. 815M Motor Driven Automatic Hob Grinding Machine. The motor for driving the automatic slack take-up device, indexing mechanism, pump, table feed and reverse is located behind the machine base.

with the vertical axis of the horizontal circular slide, so that when this slide is swiveled to the desired angle of the hob flute, the wheel is in the correct position. The ball crank handles shown on the right of the column control a vertical and horizontal adjustment to the wheel head.

The machine has the full automatic features of the Harris hob grinding machines, including indexing, reversing, feeding the hob to be ground a predetermined amount after each revolution and stopping when the desired amount has been ground off.

The motor for driving the automatic slack take-up device, the indexing mechanism, the self-priming pump and the table feed and reverse is located behind the machine base, but does not show in the photograph. This machine uses the same universal diamond truing device and setting gage as is furnished with the belt-driven machines.

The Thomas Spacing Machine Co., Pittsburgh, has purchased the patents and business of the Hill Drill Co., Philadelphia, and the Hill multiple drill hereafter will be manufactured at the plant of the Thomas company at Pittsburgh.

### Proposed Loans to Railroad from Revolving Fund

WASHINGTON, July 6.—Recommendations for the allotment of loans to railroads from the \$300,000,000 revolving fund have been made to the Interstate Commerce Commission by the Association of Railway Executives.

The recommendations follow the general scheme for the division of the fund as previously announced, under which \$125,000,000 would be used to aid in the acquisition of equipment; \$73,000,000 for additions and betterments to promote the movement of cars; \$50,000,000 for meeting maturities; \$12,000,000 for short lines, with a balance of \$40,000,000.

Under the recommendations thus far made 25 roads would receive the \$73,000,000 fund for additions and betterments, including improvement of roundhouses and engine terminal capacity, the extension of sidings, additional yard tracks and the like. Twenty-five roads would receive \$26,868,629 to aid in the acquisition of 599 freight locomotives and 239 switching locomotives with a total value of \$53,737,358. Nineteen roads would receive \$52,260,537 to aid in the purchase of 45,021 freight cars, including 7950 refrigerator cars, with a total value of approximately \$143,569,730, and nine roads would receive \$7,026,000 for additions and betterments to existing equipment, which would restore to efficient service 12,016 cars and locomotives. The roads are expected to supply the rest of the money needed for these purposes through private financing arrangements.

### Surplus Property Activities

WASHINGTON, July 6.—The Quartermaster General of the Army has decentralized surplus property activities. Most of the duties heretofore performed by the office of the Chief of the Surplus Property Division in Washington have been transferred, effective July 1, to the depot officers in the field.

Under the revised sales policy for the disposal of surplus war materials held by surplus property divisions of the Quartermaster Corps, the United States will be divided into six surplus areas, each in charge of depot officers. These depot officers will be located at New York, Boston, Atlanta, Chicago, San Antonio and San Francisco. These six offices will be known as control depots.

Depot Officers in charge of surplus property areas will be responsible for all surplus property activities within their respective areas, including surplus property in the Army reserve depots. Before definite sales are made, recommendations as to price, method of sale, and proposed date of sale, with request for authority to sell, must be submitted to the Quartermaster General for approval. A supervisory service will be maintained in Washington to approve methods of sale, minimum prices, dates of sale and transfer of surplus stocks from non-marketable locations to marketable points. There also will be maintained an organization to handle bulk sales in the Surplus Property Division. Purchase of commodities which are scattered throughout the different divisions also may be made through the Washington office.

### Discovery of Large Vanadium Ore Deposits

Engineers of the Vanadium Corporation of America have discovered large ore deposits on the South American properties which it is estimated at present rate of consumption can supply ore indefinitely. Up to the present time, known ore deposits on the properties were given a life of approximately 20 years at the rate at which ore was being extracted. Merrill G. Baker, vice-president, returned from an inspection of the properties two weeks ago, and at the directors' meeting last Wednesday made known to the board of discovery of the new deposits.

J. Leonard Reogle sailed last Thursday for England and it is believed he will make arrangements for the allotment of a larger amount of vanadium to Europe.

# Accident Prevention in the Forge Shop

## Hazards and Devices for Their Elimination—How to Stimulate Interest and Enlist the Co-operation of the Employees

**A**CCIDENT prevention with special reference to forge shops was discussed in a paper by G. A. Kuechenmeister, Dominion Forge and Stamping Co., Walkerville, Ont., presented before the convention of the American Drop Forge Association at Atlantic City, June 17 to 19. The speaker described scale and treadle guards in use by the Dominion company, explaining how the use of a sweat pad in connection with goggles had been a factor in getting the goggles used, and outlined means for stimulating the interest and enlisting the co-operation of the employees in safety work. The paper was in part as follows:

There is no short cut or royal road to safety. It takes a lot of hard, consistent effort on the part of the men above to make the rank and file realize that accidents can be prevented. But, when the men get the full meaning of the idea and know that the company is sincere in its talk of a safe shop they appreciate the value of it all and willingly do what is necessary to help the good work along.

Making the plant mechanically safe must of course be done first. It removes the possibility of men coming into contact with the moving parts of machines and is the first and best thing that the management can do to show the employees that the talk of having a safe plant is sincere. Guards cost money and when a shop is well guarded the workmen can very easily see that the company is willing to spend money to prevent accidents.

### Guards for the Forge Shop

The question of how to guard hammers is a very important one in a forge plant. When we first attempted to put guards on hammers it seemed an impossible task. We were told, not so many years ago, that it would be impossible to maintain scale guards on hammers. For some reason or other it was thought that they would retard production. We were also told that the jarring of the hammers would loosen up any bolts used to fasten the guards and finally the last argument was that the men would not keep them in place.

To-day we have scale guards on every hammer in the shop and they are looked at as part of the regular equipment. The use of this scale guard reduces the chance of eye injury and really makes aisle ways safe to use. Before we installed them everything from scale to hot forgings was likely to fly across the shop at any time. The guard we are using is not original with us but is the best of any we have tried. It is fastened to the hammer and can be swung to either side as required or taken off by two men. The hamermen very seldom neglect to replace them after setting a die, or if they do other men quickly remind them of it.

Another standard guard that has eliminated a serious hazard is the steel box we use on top of all our board hammers. Injuries due to falling boards were almost a regular occurrence with us until we installed these guards. We found that the danger was not so much in having a board fall directly to the floor as it was due to the board or pieces of the board striking a belt and being sent off in some unexpected direction at high speed.

The most serious difficulty we experienced with the guard was the damage done to the boxes by boards striking the upper inside edge of the door and breaking the box. At first we could not account for this trouble but finally discovered that it was due to the warp in the boards and the fact that the steel that had been used in making the boxes was very brittle. This trouble can be eliminated by putting the board in the rolls in such a way that if the board is warped the warp will be towards the back of the box. To prevent

trouble in case the board warps after it is in place it is well to look at the direction of the grain and keep the side of the board which was nearest the heart of the tree towards the front of the box.

### Treadle Guards

When we had all the hammers equipped with scale and board guards we tried to put guards on all the treadles. It was the same old fight all over again. We were told that treadle guards cut production, men would refuse to work with them on a hammer and if a man was careful they really were not needed. Hamermen would argue against the necessity of having them and yet in almost the same breath would tell of some man they had known who had cut off a hand, arm or even his head by stepping on an unguarded treadle.

One day last February a young fellow broke all safety rules and crushed his arm. It was not due to an unguarded treadle but focused the men's attention to dangers of a falling ram. One week later another young fellow crushed his left hand. That accident was due to an unguarded treadle and we seized the opportunity to try out treadle guards. By installing the guards before the accident was forgotten and because several of the foremen backed us we succeeded in proving that treadle guards do not retard production, that men do appreciate their worth and that they make hammers very much safer.

The guards were at first fastened securely to the base but it was soon found necessary to make them removable for repairs to the hammer so they were made to hang over the bolts. Also it was found convenient to have them interchangeable and that made it necessary to standardize the location of the air pipes.

Another point that came up was the question of "left-handed" men. It developed that a few men operate the treadle with the left foot. That was the real reason that caused us to make the guards interchangeable and now if we get a man who uses his left foot, we slip off one guard and put on another with the opening farther to the left.

The guards as now built are made of 2-in. plank. Possibly after we have made a guard that suits everybody and steel is easier to get we can build them out of sheet steel.

One feature of the guard that made a big hit with the hamermen was the scale guard we put on top of the treadle guard. It is only a piece of sheet steel bent to shape and tacked to the guard, but it prevents hot scale from falling into the shoe top. This feature of the guard and our shoe repair shop have done much to reduce foot injuries.

The guards on the treadles of our steam hammers are not as standard as for the board hammers because of the different make hammers we use, but we have satisfactory guards for each hammer in the shop and we are able to keep them on the hammers all the time.

After having covered all the gears, installed belt guards where needed, covered the treadles, boxed in the boards and put railing wherever necessary we find that there is only one permanent guard that we can install and that is screens over the heads of the men working at the hammers. We are now experimenting with screens but are not yet sure whether we want screens on each hammer or a runway the full length of the shop.

If preventing accidents in a shop merely meant placing permanent guards wherever possible, there should not be an unsafe shop in the country. It is so easy to install guards that there would be no excuse for not having them. But, after the plant has been fully equipped with all the permanent guards that can be

designed it is found that accidents are not all stopped and other things must be done.

It will be found that certain guards that cannot be fastened to hammers, presses or men must be used. Also rules for the use of safety appliances and proper conduct of the men must be formulated.

#### Getting the Men to Wear Goggles

Then, after the safety appliances are provided the question of getting men to use them comes up. A discussion of how to get men to wear goggles can well be made the subject for a separate paper. Our stand at the plant is that no man is ever safe from eye in-



Scale Guard in Use on a Drop Hammer. It is fastened to the hammer and can be swung to either side as required

jury in a forge shop unless he wears suitable goggles all the time. We cannot say that we have reached the point where our men put on goggles when the starting whistle blows and keep them until quitting time, but we can say that there are more goggles worn at present than ever before, and men are slowly getting into the habit of wearing them.

To aid the men in wearing goggles or glasses we are providing sweat pads. It is a new stunt with us but the men like it. We make them up and sell them at cost and it helps in stopping the most objectionable part of wearing eye protectors—sweat running into the eye. We are looking forward to this little pad making goggle converts for us.

Another safety appliance that is very important is the block that is used to hold the ram while dies are set or repaired in the hammer. We had several serious accidents on account of not using proper blocks but not even then were enough blocks provided nor were they kept in condition until we finally put men in the plant to do nothing else but install and maintain guards. We now have plenty blocks made up and keep them in good condition.

#### Education in Safety Necessary

Will providing goggles, blocks and safety appliances of all kinds stop accidents without any further effort? Not in our shop and I dare say the same is

true in every shop. It is when safety appliances are put into the shop and safety rules are issued that need for education becomes apparent.

Men who have worked at the trade for years without giving much thought to their personal safety do not take kindly to having old habits changed, even though it does only mean learning to use simple appliances and taking ordinary precaution. Very often they show resentment towards the man or the company that attempts to change those habits. New men must also be taught to recognize the dangers surrounding them.

It is the attitude taken by the management that determines whether the men will change from the old way of doing things or whether they will scoff at the talk of safety in a forge shop. No company has ever succeeded in reducing accidents to the absolute minimum until safety work was made a part of the business of the company.

The real beginning must be made by the manager. He must first of all be firmly convinced that it is the right thing to do and good business. Then he must be willing to back it up as much as he does other work going through the shop and he must personally know whether it is being carried out. When a manager is dead set on having a safe shop he can have it. The superintendent usually falls in line quickly. Very often he is convinced of the benefits of accident prevention before the manager is, and is only waiting for orders to go the limit.

Having the manager and superintendent lined up for a safe shop it is then necessary to interest the foremen. The superintendent can do that by being very positive and emphatic in telling the foremen that accidents can and must be stopped. No matter how many men there are in a department who believe in safety, who are willing to practice safety and co-operate to make the shop safe, if the foreman is cold on the subject the whole thing falls flat. Preaching safety to the men from above or from the outside will do no good unless the foreman does his part and does it willingly and whole heartedly.

No man knows the machine hazards in a department better than the foreman in charge. If the foreman knows that it is up to him to have the machines properly guarded and there is a safety department ready and able to install the guards without delay he can then see that it is done and it will in no way interfere with his other work.

If you provide a safety department to build and install guards, and then can get the foreman to use that department as it should be used, the problem of keeping the shop mechanically safe becomes easy.

The same method can be used successfully in the educational side of accident prevention. The foreman is the best teacher you have in the plant, and a big part of his work is teaching. If he were not a good teacher he would not last long as a foreman in these days of enormous labor turn over. His daily work is one round of breaking in new men. Teaching is his specialty and he makes good at it.

Get the foremen interested in safety. If they do not know what it means to run a safe department, teach them. It is far easier to teach foremen than to ignore them and to try to reach the men by other means. When the foreman gets the idea and the ammunition he will find many ways of cutting accidents in his department. The method a foreman uses in his teaching is not as important as getting the results. No two people teach exactly alike anyway, so why bother about the method. If the foreman has a large department and needs help, let him do the same as he does when he is called upon to rush out some special work. In that case he will pick out several of his best and most reliable men and put them on the job, and the job usually gets out on time.

If it is a safe department that the foreman wants, tell him to pick out some of his best men who know what is to be done and get them to help him. It will add interest to the men's daily duties and will eliminate accidents. If the foreman wants to change his safety men every month or two, tell him to do so. By doing it he will soon have a room full of men who got the safety habit by teaching others to be careful.

There has been much talk of shop safety committees and meetings and results. No doubt in many the committee system works out nicely, but you'll always find that in the shops where the committees do good work it is the manager or superintendent who is right with the committee all the time. There are more shops in the country where committees have been started, allowed to die out, started again and again, and the shops are still as unsafe as before any effort was made toward safety. Why? In some

cases, because the thing was started with good intentions but the wrong idea, and in others it was merely used as camouflage or because some other manager had started it in a rival shop.

Accident prevention under such conditions is doomed to failure. If it is worth doing it is worth doing well. If the directors and management do not plan it as part of the year's work, no man, whether he be superintendent, foreman, or safety engineer can make it succeed.

## Standardization of Die Blocks

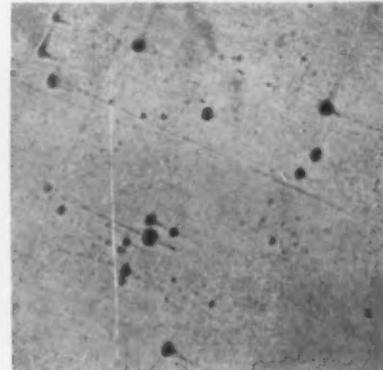
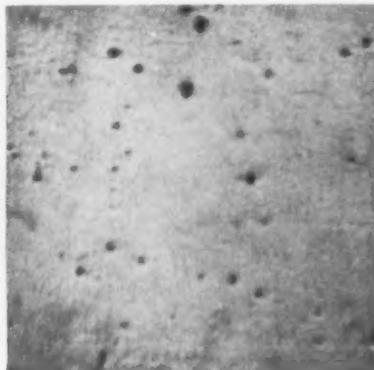
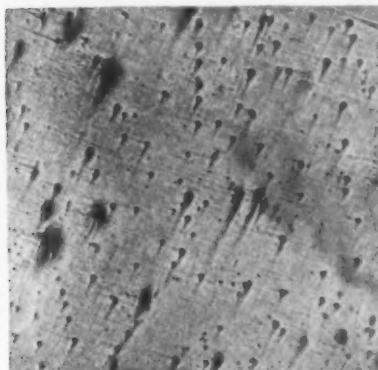
### Sizes, Kind and Quality of Steel— Forging, Annealing and Hardening

A NUMBER of factors entering into the manufacture of die blocks which can be at least partially standardized by a committee of practical drop forge men working in connection with die block makers were discussed by C. B. Porter, president Sizer Forge Co., Buffalo, and chairman of the standardization committee of Forgemens Exchange, at a meeting of the American Drop Forge Association at Atlantic City, June 17, 18 and 19. If this standardization work was done, the speaker said, it would reduce the cost of manufacture, materially reduce the time required to make die

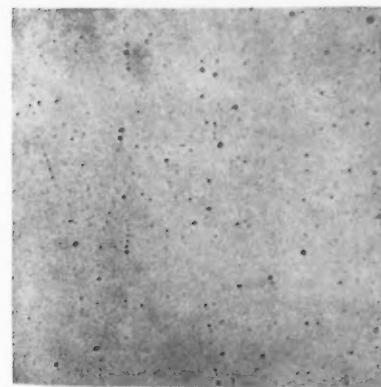
each order from each customer must be made as a separate shop order.

If one of a pair of blocks proves defective, its mate must wait for a replacement order to be entered and for the block on that order to catch up, because there are no spares of that particular size available. It sometimes happens that first one and then the other of a pair of blocks prove defective and this means two long waits that could be avoided if standard sizes could be manufactured in lots.

I believe the users can make up a list of standard



SPECIMENS, POLISHED AND MAGNIFIED 35 DIAMETERS, FROM STEELS MADE BY DIFFERENT PROCESSES ILLUSTRATING THE PRESENCE OF SONIMS. THE SPOTS INDICATE NON-METALLIC INCLUSIONS AND BLOW HOLES. READING FROM LEFT TO RIGHT, THE SPECIMENS ARE FROM A BASIC OPEN-HEARTH BILLET, BASIC OPEN-HEARTH INGOT, ACID OPEN-HEARTH INGOT, CRUCIBLE INGOT AND BASIC ELECTRIC INGOT



blocks and therefore aid prompt deliveries and insure a much more uniform quality of blocks for the die sinkers and hardeners to work on.

The sizes of blocks, steel in blocks, method of forging, annealing and hardening treatment, were factors discussed in detail by Mr. Porter as follows:

#### Standardized Sizes of Die Blocks

The standardization of the sizes of blocks into the fewest number of sections and lengths would facilitate prompt deliveries more than any other factor. Die blocks are almost always ordered in pairs. It is impossible for the maker to combine orders from several customers because of the slight variation in sizes occasioned by the fact that each user has his own idea of sizes and has no standard to go by, and therefore

sections with a few standard lengths for each section and that from such a list at least 50 per cent of all die blocks can be ordered. This would allow several orders from several customers to be combined and made in lots. The maker can easily determine the percentage of replacements that usually occur in each grade and size of block and could add the proper number of stock order blocks to each lot order to compensate for any rejections, and any spares that were thus made in excess of the order could be immediately applied to future lots.

Having once progressed this far, it would only be one step farther for the maker to manufacture standardized sizes on stock orders entirely and ship from stock almost immediately. The order book would show which were the popular sizes and approximately how

many of each size he must carry in stock to meet the demands of the trade. It costs considerable money to carry stock die blocks because the stock does not turn over fast enough owing to the fact that there are so many sizes. Not only would lot orders reduce the cost of blocks and insure much faster manufacture of all standard sizes, but it would materially aid the delivery of those blocks which must be made up to special sizes because it would reduce the number of orders going through the shop.

#### Kind and Quality of Steel

The kind and quality of steel used in making die blocks is very important to both the user and the maker. Steels made by different processes or even by different methods under the same process may give very different results in a highly tempered die block. It is just as easy to meet a chemical specification in bad steel as in good steel but no amount of forging or heat treating will remove pipes, blow holes or non-metallic inclusions which are called sonims by the metallurgist and "dirt in the steel" by the layman.

Non-metallic inclusions in steel is foreign matter that is held in suspension in the liquid steel. If liquid steel is poured into ingot molds before it is thoroughly cleansed of foreign matter, these non-metallic inclusions freeze into the steel and show up under the microscope as little specks or pit marks. Unfortunately sonims have a tendency to segregate or get together and are the basic cause of many checks. Sonims are abrasive and will dull the edge of cutting tools in proportion to their presence and often lead to the conclusion that steel is very hard because the tools dull quickly. For the purpose of illustrating the presence of sonims I have incorporated a set of microscopic photographs of steels made by different processes and which are aimed to present a fair average of all samples secured by us from time to time, but they do not mean that both good and bad steel cannot be made by each process.

The cheapest steel to use is billets supplied by the big rolling mills for the reason that the die block manufacturer who uses forging ingots must add about \$30 per ton to the cost of forging ingots to allow for cogging down to billet size and for the riser discard.

Allowing for this additional cogging expense when using forging ingots, the relative cost of various steels may be expressed as, basic billets from the rolling mills \$65, basic forging ingots \$95, acid forging ingots \$100 and electric forging ingots \$105.

If rolling mill billets are good enough for die blocks then the makers should be discouraged from using high grade steels that increase the cost of blocks. If the highest grades of steels are desirable then why put makers using that class of steel on a competitive basis with those using ordinary rolling mill billets. If the information given me that the cost of sinking an impression usually costs at least five times as much as the die block, is correct, it would seem that the best steel would prove the cheaper in the long run.

#### Forging, Annealing and Hardening

The method of forging die blocks is a problem that must be mostly decided by the manufacturer but there is one point on which maker and user should agree. It is customary to forge blocks on all six sides unless the length is too great to go under the press or hammer or unless the length is so great in proportion to the section that end forging will bend rather than upset the block. If the block bends there can be no appreciable gain in quality by end forging while the bending may strain the corners of the block, especially if they have cooled to a dark color. I believe there is a maximum length for each section of die block, expressed in terms of its sectional dimensions, beyond which it is advisable to forge blocks in multiples and machine cut to length.

The necessary requirements in annealing and grain refining heat treatments should be standardized by the users and makers. This applies only to those grades of die blocks which are subsequently hardened by the user. There seems to be some diversity of opinion as

to just what heat treatments the maker should give each block, but I personally believe that all blocks should receive at least one anneal to relieve forging strains and one grain refining heat treatment before leaving the maker's shop. This would insure a more uniform quality for your die sinkers and hardeners to work on and as it costs about half a cent a pound for each separate heat treatment this is a point that should be standardized.

There are several methods of hardening die blocks in use both among the makers and the users, but especially among the users, and it appears to me that it would be a mutual protection if makers and users could arrive at some definite conclusion on this important point.

#### While the Bessemer Is Blowing

BY WILLIAM LUDLUM

(Contributed)

You may boast about your tasty jobs in court house or in bank,

Or soft an' nifty snaps a-tendin' store;  
You may talk about the sinecure of office work and such;

But, laddy bucks, you only make me sore.

You may brag o' sportin' farms an' stock, an' a garage

or two,

An' livin' like a gent an' tellin' cash;

You may crack your throat a tellin' an' your head explode from swellin'

But at best yer' only airin' mental trash.

All the jobs that you could mention wouldn't challenge my attention,

Or the fortunes that through them may be amassed.

It's the Bessemer for me! Steel is all that I can see;

It's the job that has all other jobs outclassed.

"Danger!" say you? What's the matter? Does a little clang an' clatter,

An' a blob o' smokin' metal scare you stiff?

Chase this easy-goin' notion off your chest an' start up motion;

Playin' safe is only meant for them that sniff.

When the Bessemer starts flowin' an' the engine's up an' blowin'

An' the pumpin' an' the throbbin' o' the tuyere air comes fast,

Turnin' vessels up an' pourin'—then my soul it goes a soarin' In the glarin' an' the flarin' o' the blast.

The rattlin' dance o' spittin' on the roof means things are hittin'

Mighty hot; an' the plop o' bubblin' molten steel is sweet;

An' the splashin' an' the scootin' o' the white stuff fairly shootin'

In the molds, boys, simply takes me off my feet.

The clank o' buggies backin' down the tracks an' never slackin'

An' the chuggy-chuggy-chug o' loco toys.

As they snort an' evort wildly through the mill—to put it mildly,

Sure it's gettin' close to livin', laddy boys.

The bangin' an' the rattle, an' the yellin', cussin' battle,

An' the rush an' hurry-upness of it all;

Why, me laddy bucks, I'm sayin' that no job on earth is payin'

Wages big enough to make this job look small.

Say I, 'tis life I'm livin', an' no other job is givin'

Any man a half the perfect joy I feel;

An' when comes the time for dyin', through the mists I'll be a spyin'

An' everlastin' future—tendin' steel.

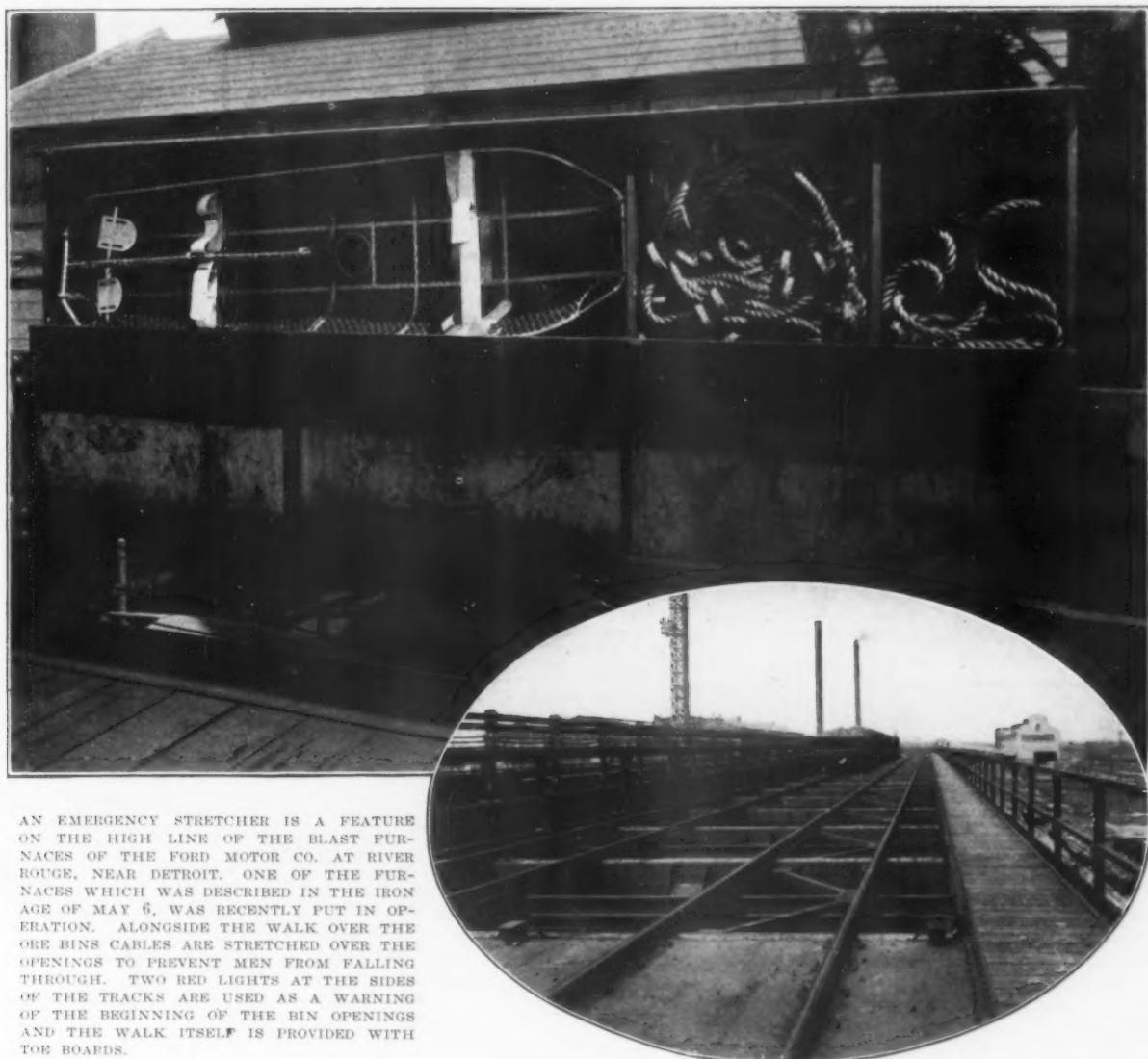
You may brag about your tasty jobs; but Bessemer for mine!

All your city splurge can't lure me from the spot;

And you cannot change my notion, pry me loose from my devotion,

While the Bessemer is blowin'—you can NOT!

At a recent meeting of the Stoker Manufacturers' Association, held at Lakewood, N. J., the following officers and executive committee were elected: President, R. Sanford Riley, Sanford Riley Stoker Co., Worcester, Mass.; vice-president, M. Alpern, American Engineering Co., Philadelphia; treasurer, A. G. Pratt, Babcock & Wilcox Co., 85 Liberty Street, New York; S. A. Armstrong, Underfeed Stoker Co. of America Book Building, Detroit; H. A. Hatton, Laclede Christy Clay Products, St. Louis; J. G. Worker, Phoenix Mfg. Co., Eau Claire, Wis., secretary.



AN EMERGENCY STRETCHER IS A FEATURE ON THE HIGH LINE OF THE BLAST FURNACES OF THE FORD MOTOR CO. AT RIVER ROUGE, NEAR DETROIT. ONE OF THE FURNACES WHICH WAS DESCRIBED IN THE IRON AGE OF MAY 6, WAS RECENTLY PUT IN OPERATION. ALONGSIDE THE WALK OVER THE ORE BINS CABLES ARE STRETCHED OVER THE OPENINGS TO PREVENT MEN FROM FALLING THROUGH. TWO RED LIGHTS AT THE SIDES OF THE TRACKS ARE USED AS A WARNING OF THE BEGINNING OF THE BIN OPENINGS AND THE WALK ITSELF IS PROVIDED WITH TOE BOARDS.

## Cleveland Milling Machine Co. Reorganized

The Cleveland Milling Machine Co., Cleveland, has been reorganized and its manufacturing interests have been separated into two companies, one of which will manufacture its line of milling machines and the other the milling cutters. The manufacture of milling machines will be carried on under the name of the Clark-Mesker Co., which is incorporated with a capital stock of \$500,000, and the manufacture of milling cutters and special tools will be carried on under the name of the Shields Cutter Co.

The name of the Cleveland Milling Machine Co. has been changed to the Shields Cutter Co. The ownership of the plant has passed to the Cutter Building Co., the stock of which is owned by the Shields Cutter Co. The Shields Cutter Co. will occupy the three-story building used by the old company in the manufacture of milling cutters and also the heat treating plant, and the Clark-Mesker Co. will occupy under a lease the former company's one-story factory, used by the old company in the manufacture of milling machines. A third building used for office purposes will be divided between the two companies, the cutter company occupying the upper floor and the milling machine company the lower floor. Officers of the milling company are D. B. Clark, president; L. H. Mesker, vice-president and general manager; C. A. Morris, secretary and treasurer. The directors include D. B. Clark, L. H. Mesker, T. E. Borton, E. D. Rogers and A. V. Cannon. Mr. Clark was formerly manager of the Chicago office of the Cleveland Milling Machine Co., and in addition to being at the

head of the milling machine company will be manager of both the Cleveland Planer Co. and the Cleveland Machine Tool Co. Mr. Mesker was formerly associated with the Kearney & Trecker Co., Milwaukee, but more recently had been general sales manager of the Cleveland Milling Machine Co., and since last December had been its vice-president and general manager. Frank S. Shields, formerly president of the Cleveland Milling Machine Co., is president of the Shields Cutter Co. and L. M. Lucius, secretary of the old company, is vice-president and treasurer. L. W. Edwards is secretary. In addition to the officers, E. H. Ingram and J. H. Whitelaw are directors.

## Will Double Capacity When By-Products Plant Is Completed

The St. Louis Coke & Chemical Co., Granite City, Ill., expects to start the heat in the ovens of its new plant between Aug. 15 and 30. At that time, a blast furnace and one battery of 40 Roberts by-product coke ovens will be completed, and a second battery of 40 ovens will be fired shortly thereafter. It had been hoped to complete the first unit of the plant a month earlier, but a strike of the construction forces, called May 6, delayed operations. Although the company refused to accede to the demands of the men, it was able to resume work with a full force on June 15.

As soon as the first unit of the plant has commenced operations, the company will immediately lay plans for doubling its facilities. Ultimately the plant will include six blast furnaces and 320 ovens, all of the Roberts type.

### Heavy Hot-swaging Machine

A hot-swaging machine designed especially for forming heavy tubing for automobile builders and other kinds of tubular or solid stock, has recently been developed by the Langelier Mfg. Co., Arlington, Cranston, R. I. The hot process of swaging as utilized with this machine is well adapted, the manufacturers point out, for use on heavy work where much reduction is desired without annealing. The No. 8 hot-swaging machine, as it is called, is designed to handle tubes up to 5.5 in. and solid rods 2.5 in. in diameter.

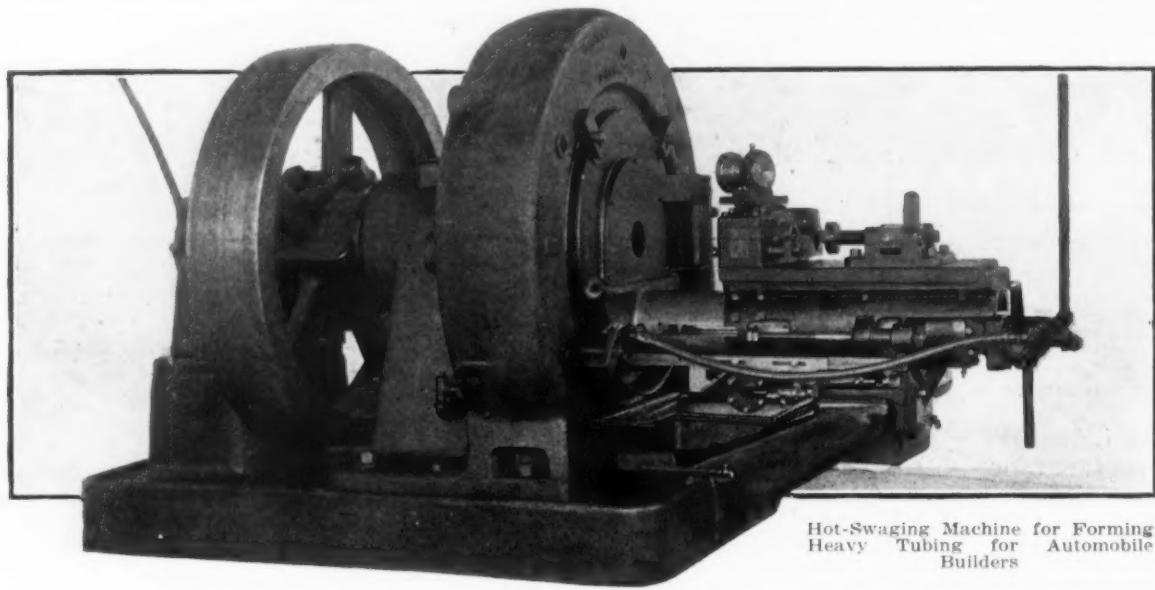
To meet the severe service imposed by continued hot-swaging operation the machine is ruggedly constructed and is provided with a water-cooling jacket around the head and spindle bearing. The spindle is supported by an extra long bearing and at the end by a back bearing; it runs in floating cast-iron bushings. Tubular construction of the spindle permits pieces with long parallel portions or taper to pass through and beyond the dies and also the use of compressed air to cool the dies and clear them of scale.

When the spindle is rotated centrifugal force throws the hammer blocks away from the center, thus opening the dies. Twelve head rolls project toward the center beyond the path of the hammer block rolls;

method of time study, the authors declare, are very crude and different from those derived from motion study. Stop-watch records give only approximate times. Micromotion records, on the other hand, it is asserted, give exact times, adequate records of motions, and a complete picture of the surroundings and conditions under which the work was done. Pictorial records can be made of operations of the most skilled men and women in a plant which can be used as models for the other workmen. Such records, moreover, can serve to pick out the best features of an operation performed by several skilled workmen and thus get the procedure for a standard operation. The authors, who are consulting engineers, Eagle Rock Way, Montclair, N. J., advocate a properly developed suggestion system for bringing forth the many small improvements to determine, "The One Best Way to do Work."

### Rubber Belting for Removal of Hot Clinkers

A rubber conveyor belt has recently been installed in the plant of the Standard Portland Cement Co., Leeds, Ala., for removal of hot cement clinkers at temperatures at more than 200 deg. Fahr. To prevent scorching of the belt which is of Goodyear Hy-Temp type and designed for use at temperature up to 200



Hot-Swaging Machine for Forming Heavy Tubing for Automobile Builders

as the rolls pass each diametrically opposed pair of rolls, they are forced toward the center of the machine and carry the hammer blocks and swaging dies with them. Immediately on passing the head rolls, centrifugal force throws the hammer blocks and dies apart again. The speed of the spindle is 150 r.p.m. and as there are twelve head rolls, 1800 blows per minute are transmitted to the hammer blocks and dies.

The work is held concentric with the dies by pneumatically operated clamping jaws bolted to a saddle which moves forward and backward on its slide ways by means of hydraulic pressure. To provide easy access to the dies and working parts of the machine, the holder and cover are self-contained and hung on a hinge.

### One Best Way to Do Work

The photographic micromotion method of recording working data, as it is called by the authors, is described in a paper entitled "The One Best Way to do Work," prepared by Frank B. Gilbreth and L. M. Gilbreth and recently presented before several chapters of the Society of Industrial Engineers. By means of this method the skilled performance of workmen is recorded at the habitual speed on motion-picture film. When developed this film can be projected slowly or can be minutely scrutinized as consecutive lantern slides and thus the characteristic behavior of the workman under actual working conditions may be studied at any time or place.

Standards derived through the old-stop-watch

deg. only, the belt was inclined 12 deg. and the lower pulley dipped in water. The film of cold water serves to prevent damage to the belt. Crescent belt fasteners were utilized to join the ends of the belt; these fasteners served to bring the ends tightly together in a snug joint, which made the belt practically endless on the pulley side so that no clinker ash could get into the joint and abrade the belt ends. In six months of operation this conveyor has carried 61,000 tons of clinker.

### Instrument for Checking Up Overloaded Trucks

A portable instrument, known as a loadometer, for determining the road weight of a truck is a recent product of the Black & Decker Mfg. Co., Towson Heights, Baltimore. The instrument is primarily for highway commissioners for checking up overloaded trucks thus to prevent the tearing up of roads. The meter is slipped under the truck axle and the truck is jacked up by means of a screw jack mounted on the plunger of the instrument. The base of the loadometer is an oil-filled cylinder in which the plunger operates, and the weight carried by the plunger is indicated on a high pressure gage connected to the oil chamber. By using a pair of loadometers under the rear axle of a truck, the maximum load per inch of tire width is readily determined.

The annual outing of the Purchasing Agents' Association of Pittsburgh will be held at "The Pines" on the afternoon and evening of July 17.

## M. A. Hanna & Co. Take Over Buffalo Union Furnace Co.

BUFFALO, July 6.—M. A. Hanna & Co., Cleveland, have leased the plant of the Buffalo Union Furnace Co. for four years with the privilege of buying the plant at the end of 20 years.

President Frank Baird and Harry Yates, first vice-president and treasurer, will retire. The Hanna interests have always been closely interwoven with the interests of the Buffalo Union Furnace Co. as stockholders and sales agents of the products. The new lease was effective July 1.

The following statement is issued by the Buffalo Union Furnace Co.:

"On July 1 the firm of M. A. Hanna & Co. took over the Buffalo Union Furnace Co. property and will hereafter operate the premises. The Hanna interests have been connected with the Buffalo Union company since its origin and members of this firm have always been interested in it in addition to being its sales agents. The principal owners of the Buffalo Union Furnace Co. stock have been Harry Yates and Frank B. Baird. The latter built each of the company's three furnaces as different organizations and 20 years ago combined them into the Buffalo Union Furnace Co.

"Mr. Baird is in the late sixties and for the past two or three years has expressed a desire to retire from much active work. C. A. Collins, second vice-president, upon whom the company has depended in a large measure since Mr. Baird's illness four years ago, will remain with the new interests in operating the plant.

The lease is for a period of four years with the privilege of purchasing at the end of 20 years. The capacity of the Buffalo Union Furnace Co. plant is about 300,000 tons of pig iron per year and the annual rental is approximately \$2 a ton of pig iron capacity. The change will make no difference to employees of the company or the trade in general, as the Hanna interests have been connected with this company for many years, and it has already become known as one of the Hanna companies. The Baird-Yates syndicate retains its Canadian iron interests, which are not affected by the deal.

## Another Drilling Test

Demonstrations made at Atlantic City, N. J., during the railroad convention, June 9 to 16, showed that hard and tough alloy steels can be drilled on a real production basis at economical costs. On an American 6 ft. radial drilling machine, open-hearth chrome nickel steel was drilled at the rate of 20 in. actual penetration per minute, with 1, 1½ and 1¾-in. Hercules high speed drills made by the Whitman & Barnes Mfg. Co., Akron, Ohio. Drills of other sizes also made equally interesting records in drilling this alloy steel. The steel drilled was of 0.50 per cent carbon, 0.90 chromium, 1 per cent nickel and 0.75 manganese. The figures are as follows:

| Size of Drill, in. | Drill Speed, R.P.M. | Feed Per Rev. | Penetration |         | Thickness of Steel, In. | Time Per Hole, Sec. | Average Holes Per Sec. |
|--------------------|---------------------|---------------|-------------|---------|-------------------------|---------------------|------------------------|
|                    |                     |               | Per Min.    | Per In. |                         |                     |                        |
| 1                  | 500                 | 0.040         | 20          | 3       | 9                       | 32                  |                        |
| 1½                 | 500                 | 0.040         | 20          | 3       | 9                       | 24                  |                        |
| 1¾                 | 500                 | 0.040         | 20          | 3       | 9                       | 27                  |                        |
| 1½                 | 500                 | 0.029         | 14½         | 3       | 12½                     | 29                  |                        |
| 2                  | 206                 | 0.040         | 8½          | 3       | 22                      | 27                  |                        |
| 2½                 | 206                 | 0.022         | 4½          | 3       | 40                      | 12                  |                        |

Holes 3 in. deep were drilled in 9 sec. with 1, 1½ and 1¾-in. drills, attaining a penetration of 1 in. every three seconds, which is considered a remarkable record in drilling steel of this character. The demonstrations were made with the purpose of maintaining maximum and economical production at speeds and feeds which could be duplicated under shop conditions.

The Nieu Steel Corporation, Ltd., 103 Bay Street, Toronto, Ont., has increased its capital stock from the sum of \$200,000 to \$300,000. It is the intention of the company to acquire a plant at Midland, Ont., where it proposes to produce pig iron, etc. Among those interested in the company are H. A. Morin, Welland, Ont., general manager; D. A. Paine, 103 Bay Street, Toronto, secretary-treasurer.

## Open Price Plan Opposed by Department of Justice

WASHINGTON, July 6.—The Department of Justice is continuing its prosecutions under anti-trust laws. The latest suit instituted by the Department is against 13 of the leading manufacturers of linseed oil. The bill of complaint was filed at Chicago. It charges that the defendants, since October, 1918, have engaged in an unlawful combination and conspiracy to suppress competition among themselves in selling linseed oil, to enhance their prices for such oil, and to prevent the lowering of prices by means of a so-called "open price plan." The complaint alleges that this "open price plan" includes the continuous interchange among the defendants of information as to their quotations, and as to the prices received by them in actual sales.

The Department of Justice in this connection has called attention to its recent suit against the members of the so-called "open competition plan" of the American Hardwood Manufacturers' Association, in which the District Court held that the hardwood manufacturers had violated the law in keeping up prices by means of their "plan." This included the continuous interchange of information as to prices received in actual sales. The District Court enjoined the defendants in that case from continuing to operate their plan. The Supreme Court recently refused to suspend that injunction pending an appeal.

The Department of Justice takes the position that the practice of keeping up prices by such "plans" is not to be excused, because the participants may have lodged information as to their "plans" in the office of Governmental bureaus or departments, or because of other like reasons. The Department of Justice has also stated that it will bring proceedings to enforce the law against all practices of such nature.

## Freight Rate Arguments Ended

WASHINGTON, July 6.—Concluding arguments have been made during the past week in the increased freight rate hearing before the Interstate Commerce Commission. The expectation is that the decision of the Commission will be announced about Aug. 1 and that increased freight rates will go into effect on Sept. 1 when the six months' guaranty by the Government of railroad earnings provided in the transportation act expires. Inasmuch as the Railroad Labor Board has promised to announce its findings as to increased wages for railroad employees by July 20, it is expected that the commission will make allowances for such increased expense in computing the rates necessary to bring the earnings of the roads up to a 5½ or 6 per cent basis. It has been contended that an increase in freight rates of as much as 55 per cent would be necessary if the requests of the carriers and employees are granted.

Among attorneys for various interests who presented concluding arguments before the commission was W. G. Wheeler, representing steel furnaces at Buffalo, who opposed the suggestion made by the Jones & Laughlin Steel Co. for a specific increase instead of a percentage increase in rates on iron ore. A. F. Cleveland, assistant freight traffic manager of the Chicago & Northwestern Railroad, defended the proposed increases in rates on iron ore which have been objected to by mine owners and others affected.

## Combination of Firms Having Common Ownership

The sales, purchasing, accounting and executive departments of the Reed-Prentice Co., Worcester, Mass.; Becker Milling Machine Co., Hyde Park, Mass., and the Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass., have been combined and the main offices are now permanently located at No. 53 Franklin Street, Boston. The three companies have a common ownership. The various agents throughout the United States that formerly handled the products are now displaced by direct factory branches in Boston, Worcester, New York, Detroit, Chicago, Cleveland and Indianapolis.

## Thirty-seven Years in the Machine Tool Business

On July 7, Albert R. Stedfast completes 37 years' connection with Hill, Clarke & Co., Boston, machine tools, a partnership organized in 1864. During those 37 years, Mr. Stedfast has witnessed some remarkable changes in the construction of metal working machinery and methods of its marketing.

Mr. Stedfast's first position with Hill, Clarke & Co. was that of office boy. At that time the firm consisted of Henry W. Clarke, president, senior member; Henry Pickering, treasurer; Hamilton Hill, in charge of the engine and boiler department; Charles A. Clarke, in charge of the St. Louis branch; and Joseph Wainwright.

The company was located on Oliver St., where the present New England Telephone & Telegraph Co. building stands. It was the pioneer exclusive machine tool house in the country. After the concern had been in business some years, J. J. McCabe started a machine tool company in New York; McCabe was followed by E. P. Bullard and Manning, Maxwell & Moore, the latter acting as Hill, Clarke & Co. agents for the Flather lathe.

It, therefore, was a long time before Hill, Clarke & Co. had real competition in Boston. Its line of tools were limited, but as new machinery came on the market, competition increased. Chandler & Farquhar was one of the earliest Boston competitors. That house first handled the Lodge Davis lathe, now built by the American Tool Works, Cincinnati. Later A. B. Pitkin, with an office opposite that of Hill, Clarke & Co.'s, was an active competitor, but subsequently went out of business. "Bob" Lynd, Lynd-Farquhar Co., traveled for Pitkin.

New England was the center of the machine tool industry. Since then the trend of the industry has been westward, until to-day Cincinnati bears the honor of being the center of it. Mr. Stedfast attributes the movement west to the conservatism of the New England tool maker in improvements of design. The early Western machine tool products were constructed largely of Southern iron, which was softer than that employed by New Englanders, therefore they wore out faster. But in design and speed the Western product was often superior to the Eastern.

When Mr. Stedfast became associated with Hill, Clarke & Co., the firm handled P. Blaisdell lathes and drilling machines, made in Worcester, Mass., and now the product of the Whitcomb-Blaisdell Machine Tool Co., Worcester; Flather lathes, made at Nashua, N. H.; Gleason lathes and planers, made by the William Gleason Co., Rochester, N. Y.; and Whitcomb planers, made at Worcester. The firm also was direct representative of the Brainard Milling Machine Co., now the Becker Milling Machine Co., Hyde Park, Boston.

Later, among other tools, the company sold a one-style drilling machine made by Moore & Wyman, South Boston, which weighed between 1500 and 1800 lb. To adjust the drill head, the column was threaded and there were two washers, one at the top and the other at the bottom, that were locked with nuts. The company sold many of these machines. When it wanted to stand up a sample machine, a gang of men would pick up from the store floor and deposit it in the desired location.

Mr. Stedfast was with the company but a short time when it received an order for three lathes, but the customer insisted on hollow spindles. Several lathe manufacturers were approached by the firm, but refused to undertake the filling of the order. Mr. Joseph Flather happened to be in the Hill, Clarke & Co. office when a letter from a manufacturer turning down the order was received. Henry W. Clarke stated the facts to Mr. Flather, who said he would build the lathes and did so, thereby laying the foundation of the hollow spindle lathe. Mr. Flather continued to make these lathes for years.

Large machines, like planers, were sold by the pound when Mr. Stedfast joined the Hill, Clarke & Co. forces. He remembers the first 36-in. lathe he sold. It was a

Fifield, and only because his price and weight figured out less than an active competitor's, did Mr. Stedfast receive the order.

Mr. Stedfast has no record of machine tool prices when he was an office boy. He retains, however, some price lists issued in the early 1900s. For instance, in 1902, the company sold 2-in. Blaisdell lathes at \$254 each, with 22 per cent discount, and 16-in. x 6-ft. lathes, same make, at \$342, with same discount. In that year it sold No. 4 Peerless pipe threading machines, made by Bignal & Keeler, Edwardsville, Ill., at \$600, less 15 per cent discount, f.o.b. New England points, and 30-in. x 8-ft. Whitcomb planers second belt drive, head on cross rail, at \$860. In July, 1903, 14-in. x 6-ft. Flather lathes, new change gear, sold at \$270 each, and 16-in. x 6-ft. at \$312.

All lathe tools in the early days were hand forged. Hill, Clarke & Co. sold 12 tools in a set, 1-in. x 1/2-in., at \$3.50 the set.

Mr. Stedfast well remembers his first impressions of high speed steel, which was introduced into Boston as Capital steel. An exhibition of this steel turning in a lathe, 1500 revolutions to the minute, caused much excitement in machine tool circles. Mr. Stedfast insisted on everybody he came in contact with viewing the exhibition because it was "wonderful."

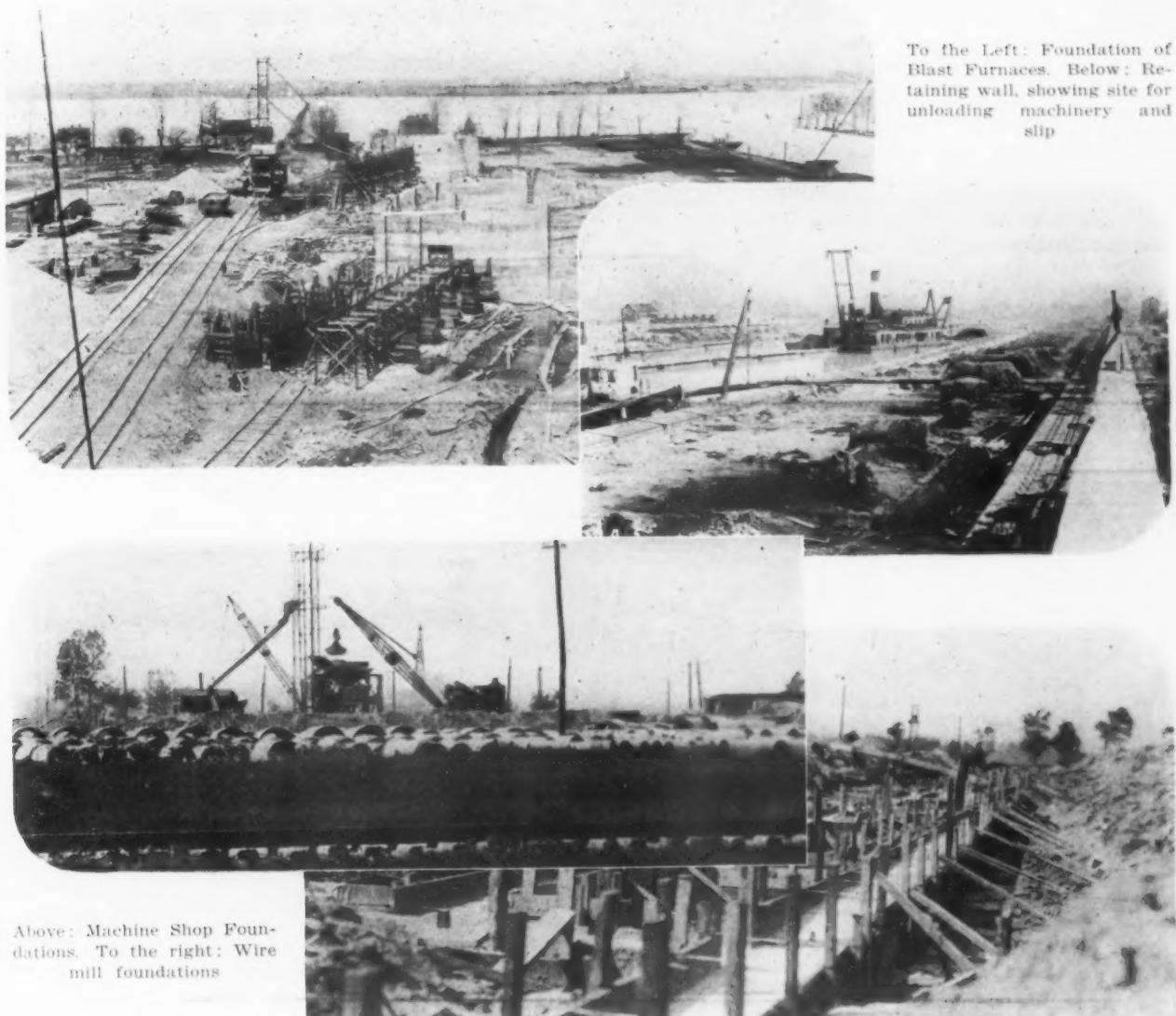
Business conditions in 1882, 1883 and 1884, boom years, were much the same as those the machine tool industry has been passing through. It was extremely difficult to get machinery owing largely to transportation conditions and the expansion of business in which metal working machinery was used. P. Blaisdell, Worcester, Mass., succeeded, after much delay, in making a shipment of four lathes to Hill, Clarke & Co. In due time the lathes arrived at the Boston railroad terminus, were loaded on a wagon and carried across Boston to the Hill, Clarke & Co. store. A user of lathes happened to see the Blaisdell product unloading from the car. He said nothing, but followed the wagon to the store, where he bought them standing on the wagon, the price being the last consideration.

Mr. Stedfast remained in the office six years. He was then started on the road, working within a radius of 25 miles of Boston. His territory was gradually increased until it included all New England. After serving 21 years on the road, Mr. Stedfast was taken into the partnership, which now consists of Charles A. Clarke, president and treasurer; J. W. Roulston, vice-president, and Albert R. Stedfast, secretary and general manager.

These gentlemen and Albert M. Stedfast constitute the entire list of stockholders.

William M. Bailey, for a number of years secretary to the president of the Carnegie Steel Co., and later assistant to president of the Midvale Steel & Ordnance Co., and David S. Lewis, who has been head of the Lewis Engineering & Supply Co., Pittsburgh, have organized a new company under the firm name of Bailey-Lewis, Inc., with offices at 406-407 Bakewell Building, Pittsburgh. Mr. Bailey is president of the new company, and Mr. Lewis is secretary and treasurer. The firm is engaged in handling mine, mill and contractors' supplies and equipment. It has the exclusive agency in western Pennsylvania, eastern Ohio and West Virginia for the New York Blower Co., Chicago, manufacturer of heating and ventilating apparatus; the Atlas Engineering Co., Amherst, Ohio, manufacturer of metallic packing, steam traps and valves; the Empire Metal Co., Syracuse, N. Y., babbitt metal, solder and casting metals, and the Hauser-Stander Tank Co., Cincinnati, which makes wooden tanks and vats.

Arthur G. McKee & Co., engineers and contractors, Cleveland, have been awarded a contract by the Kittanning Iron & Steel Mfg. Co., covering the designing and furnishing of materials for equipping its furnace at Kittanning, Pa., with a new skip bridge, furnace top structure, McKee revolving distributor, downcomers, etc.



Above: Machine Shop Foundations. To the right: Wire mill foundations

## Progress Being Made at Ojibway Plant of Canadian Steel Corporation

DETROIT, June 29.—Although construction work at Ojibway, the new model industrial city of the Canadian Steel Corporation across the river from Detroit, is progressing rather slowly, because of lack of sufficient labor and material supplies, still the plants to be erected there are beginning to take shape, at least so far as their foundations are concerned, and work is progressing on the laying out of the streets for the city of 25,000 workers, who some day will come to work in the mills.

Ojibway has been divided into two sections. The industrial district, which has a river frontage of approximately one and five-eighth miles, extends back approximately a mile to the tracks of the Essex Terminal Railway, which traverses the property. Back of the railroad lies the line of demarcation between the industrial district and the residence and business district, which extends back another mile. This line of demarcation is a wide and well-paved thoroughfare.

A beautiful boulevard has been built around the residence district, which will have streets 66 ft. wide, with houses set back 30 ft. from the street. The houses will be of brick or terra cotta construction.

Most of the large amount of money already spent upon the project has been used in the industrial operations. One of the first problems considered was that of efficient and adequate dock facilities for the shipping of finished products and the reception of coal and iron ore. Materialization of plans for this work has pro-

vided Ojibway with a slip and docks said to be among the largest in the world.

The slip extends half a mile inland from the Detroit River, and is capable of extension for another half mile. It is deep enough to float the largest Lake freighters, and is wide enough to permit two of them to pass each other. On either side of this slip are large reinforced concrete docks of the most modern construction. These will be equipped with loading and unloading equipment. One of these docks is to be used for unloading coal and the other for unloading ore. The estimated cost of the dock and slips was \$2,000,000.

Adjacent to the docks will be the great coal and ore storage buildings. The dimensions of the docks are 2500 ft. long and 250 ft. wide. They are laid upon 12,800 fir piles, each 65 ft. long, which were driven down to bed rock and tested for settling before the superstructure was erected. These docks will accommodate six of the largest Lake freighters at one time.

All of the plans of the corporation have not yet been divulged, but according to the preliminary announcements, made when the work was started, there were to be a number of blast furnaces and wire, rod, bar, rail and structural steel mills, with their numerous auxiliary units. Foundations for several of the furnaces and mills have been laid and the buildings are progressing steadily. Four of the blast furnaces are in course of construction. Foundation work is under way for machine shops and a wire mill.

## SHIP PLANT SOLD

Buildings and Equipment Are Being Purchased  
by Pacific Coast Manufacturers

The Skinner & Eddy Shipbuilding plant of Seattle, Wash., on June 21 passed into the hands of the Barde Industrial Corporation, which is an allied firm of the Barde Steel Products Co., New York, for a consideration close to \$1,500,000. The plant will be dismantled and the buildings and equipment are being sold.

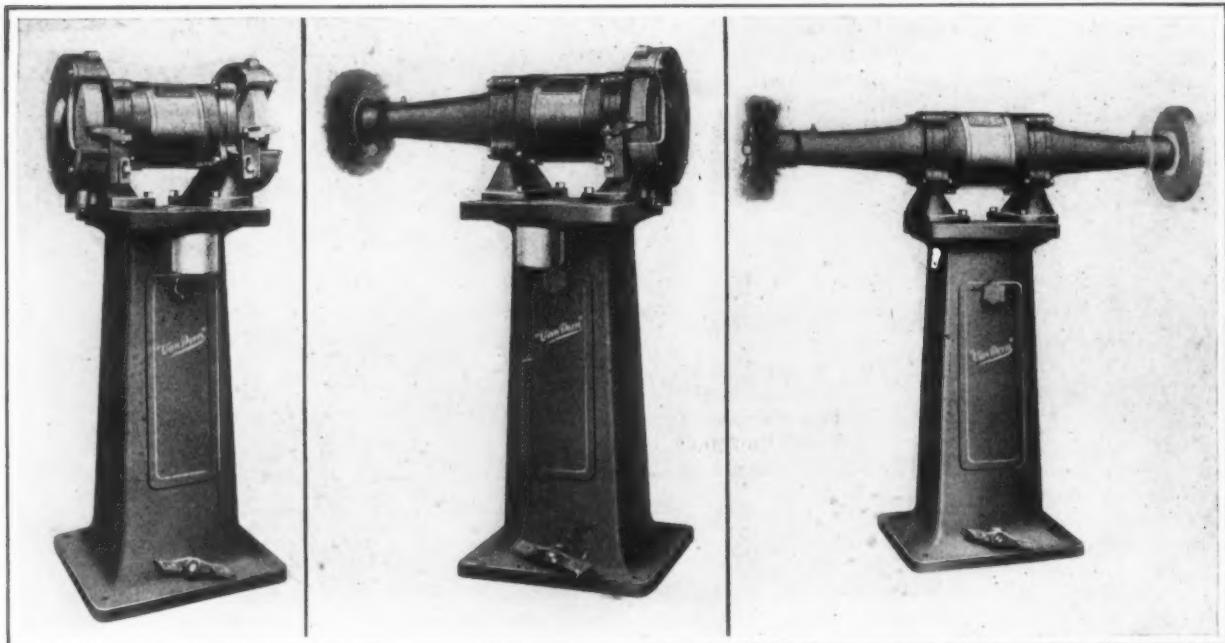
The deal was consummated by L. B. Barde, managing director, and M. Barde, head of the firm of M. Barde & Sons, Portland, Ore. David Skinner and Henry Seaborn represented the Skinner & Eddy Corporation.

The entire plant, including machinery, equipment, shops, buildings, also approximately 10,000 tons of steel plate, shapes, bars and billets passed into the

Heavy Duty Grinding and Buffing  
Machines

A new line of 1-hp. electric grinding and buffing machines of heavier types than have been heretofore made by this company has been brought out by the Van Dorn Electric Tool Co., Cleveland. This supplements the company's lines of 1/3 and 1/2-hp. aerial grinders and 1/3-hp. tool post grinders.

The new line includes a floor grinder and a bench grinder with two guarded wheels and similar in design, a floor grinder with one guarded wheel and a left hand extension having a polishing brush, a floor type machine with a buffer or grinder extension on both ends, and an aerial grinder. The machines are made for direct current of 115 or 230 volts or for alternating current, 110 or 220 volts, 3-phase 60-cycle. They will also be made on special orders for 440 volts 3-phase, 60-cycle, or 110, 220 or 440 volts, 2-phase, 60-cycle.



One-Horse Power Floor Type Electric Grinding and Buffing Machines. From left to right, the machines illustrated are the grinder with two guarded wheels, grinder with one guarded wheel and left-hand extension for brush, and machine with buffer or grinder extension on both ends

hands of the Bardes. Buyers from all parts of the Pacific Coast are in Seattle busy in the purchasing of tonnages of steel and needed equipment for machine shops, foundries, blacksmith shops, forging plants, pattern and joiner shops, pipe shops, sheet metal works and various other industrial plants.

The Skinner & Eddy plant started steel-ship construction in 1916. Ground for the plant was broken on Feb. 14 of that year. The keel for the first ship built by this company was laid May 2, 1916, and the vessel, the *Niels Nielsen* built for the B. Stolt Nielsen Co. of Norway, was launched Nov. 9 of that year. From that time on, the company started speeding up until in 1918 the plant was proclaimed the fastest shipbuilding organization in the world.

The machinery has all been installed within the last three years and is of the latest type.

A large ocean terminal will be built on the site when the Barde Corporation is through with the plant. It is estimated that in three or four months the equipment will be all cleaned up.

The annual report of the Great Northern Iron Ore properties shows a surplus after taxes and charges of the trust for the year ended Dec. 31 of \$5,750,632, equivalent to \$3.83 a share on the 1,500,000 certificates of beneficial interest outstanding. This compares with \$4,522,504, or \$3.01 a share in the preceding year. Receipts showed an increase during the year of \$1,259,370, but the undistributed receipts showed a decrease of \$249,368.

The diameter of the motor housing is less than that of the wheel, overcoming a disadvantage said to be found in some types of small grinders. The shaft is mounted on ball bearings with inner races locked to the shaft to provide for end thrust and to eliminate shaft wear. The bearing housings are dust proof and have support directly under the bearings. Ventilation is provided by a centrifugal fan which creates a forced draft through protected openings at the rear of the motor. The pedestal types are provided with pedal switches. The direct current machine is also fitted with an automatic starter inside the column.

The wheel guards are provided with a lug for attaching an eye shield. The tool rest has both horizontal and vertical adjustments. The height of the floor type to the center of the spindle is 39 in. The emery wheels on the bench and floor grinders are 10 in. in diameter and have a 1 1/2-in. face and 3/4-in. hole. The distance between wheel centers is 15 7/8 in. on the two-wheel grinder, 30 1/8 in. on the one-wheel grinder with left-hand extension for brush and 44 7/8 in.

The floor type machine with buffer and grinder extension at each end, when desired for buffing exclusively, can be supplied with a speed of 3600 r.p.m. and suitable for 6 or 7-in. wheels or brushes.

The La Salle Steel Co., Halsted and Twenty-second streets, Chicago, has awarded a contract for the construction of a plant at 150th Street and White Oak Avenue, Hammond, Ind. Seven buildings will be erected at a cost of \$300,000.

## PUDDLERS ADVANCED

### Higher Wages Under New Contract—News of the Mahoning Valley

YOUNGSTOWN, OHIO, July 6.—Except for departments requiring continuous operation, such as blast furnaces and by-product coke oven batteries, activities among iron and steel producers in the Mahoning and Shenango valleys suspended at the close of the Saturday turn and did not resume until this morning, owing to the Independence Day observance.

Settlement of the sheet and tinplate scales for the ensuing year is a stabilizing factor and will pave the way for new business and for the placing of sheet bar contracts by makers of semi-finished material, which have been held in abeyance. While maximum rollings of the larger sheet makers are booked for the rest of the year, some of the smaller producers are open to new inquiries, on which reasonable production can be expected.

The plant of the Falcon Steel Co. at Niles has suspended for the week. A new lodge formed among employees of the Newton Steel Co. by the Amalgamated Association of Iron, Steel and Tin Workers is preparing to present a local scale.

#### No Signs of Improvement

The transportation situation shows no signs of improvement, but on the contrary gives indications of becoming more serious with the partial diversion of cars for coal carrying purposes. If a complete embargo is enforced against the use of cars available for the coal trade, drastic curtailment of some lines of steel production is certain.

The boiling rate for the July-August period is based on a 3.25c. card, sales sheets being examined at Columbus, Ohio. The settlement two months ago disclosed a 3c. card and boilers and muck mill hands will therefore receive an advance. Under the old scale, a card rate of 3.25c. would have entitled puddlers to \$16.12 per ton, as compared with \$14.88 for May and June. However, an increase on the rate when the card is 1.50c. was granted under the new contract, and the differential will apply to the new scale, making the boiling rate still higher.

The Youngstown Foundry & Machine Co. has reconsidered its decision to build a new roll foundry on a site at Girard, Trumbull County, and to consolidate its two plants now located in Youngstown. Construction

will not be undertaken until costs are on a more normal basis.

#### Diversion of Box Cars

Sheet mills have been further handicapped in making deliveries by reason of the diversion of box cars to the grain territory and some types of open-top cars to the coal mines. By providing a temporary covering, most frequently a tarpaulin material, makers have been enabled to utilize open-top type cars for movement of sheets. Preference in the use of box cars is being given to tin makers in some cases.

Deliveries now are wholly subject to shipping conditions and all new business considered for several months to come will be restricted in this degree.

A reflection of the transportation situation is the decrease in loaded car movements on the Franklin division of the New York Central railroad from 44,893 cars in June, 1919, to 38,551 in June, 1920, a reduction of 6342. Of the total number, 80 per cent of the cars were destined for Youngstown or originated here.

#### Sheet Business

There is no spot sheet business open in this territory, the larger producers allocating output to regular customers. Their quotations, as a consequence, are less than those of the smaller producers who are able to roll orders, in some cases, in three to four weeks. Blue annealed is quoted at 5.50c. by one maker, galvanized at 9c. and No. 28 gage black at 8c.

With settlement of the sheet scale, there is expected to be a big increase in the volume of semi-finished business. Some buyers of sheet bars have been holding off until adjustment of the scale and these are now expected to come into the market. Sales in the past 10 days have been made between \$75 and \$80 for open-hearth sheet bars. Such makers are handicapped, too, by inadequacy of car supply and have only a fraction of their wants in this respect supplied.

Carnegie Steel Co. blast furnaces, which are not supported by by-products coke ovens, are operating irregularly because of interference with coke shipments from the Connellsville region.

Puddle mills of the A. M. Byers Co. at Girard resumed July 6 after a suspension since Wednesday night, June 30, due to failure to renew the wage agreement with the employees. About 600 men were affected. The furnaces started pending signing of the bar iron agreement and are operating on the basis of all other plants operating under the Amalgamated bar iron scale.

#### Decision Favorable to Donner Steel Co.

WASHINGTON, July 6.—In the case of the Donner Steel Co., Inc., vs. Delaware, Lackawanna & Western Railroad Co. et al., the Interstate Commerce Commission has held that the practice of defendants to spot cars or to make an allowance for spotting cars at the plants of complainant's competitors in the Buffalo rate district while refusing to spot cars or make an allowance therefor at complainant's plants in that district is unduly prejudicial. The complainant, which is engaged in the manufacture of pig iron, finished and unfinished steel products, and ferromanganese, and has two plants, one at Buffalo, and the other a few miles east thereof at North Tonawanda, N. Y., alleges that the defendant's railroads refuse to spot cars within its plants, although they perform this service for other companies. In its decision the Commission says:

"It is reasonably clear that the circumstances and conditions surrounding the receipt and delivery of freight at the various iron and steel mills in the Buffalo rate district are not sufficiently different to justify or explain the different practices of the carriers. The discriminatory treatment to which complainant has been subject is plainly condemned by the act.

"Upon the record before us we find no violation of section 1 of the act, but we are of opinion and find that the practice of the defendants to spot cars or to make an allowance for spotting cars for or at the plants of the Lackawanna Steel Co., the Buffalo Union

Furnace Co. and the Wickwire Steel Co., complainant's competitors in the Buffalo rate district, while refusing to spot cars or to make allowance therefor at the plants of complainant in said district, has been, is, and for the future will be, unduly prejudicial to complainant in violation of section 3 of this act."

#### Union Carbide & Carbon Corporation Plans Expansion

The Union Carbide & Carbon Corporation, 122 South Michigan Avenue, Chicago, is planning to engage in the alloy steel industry in a big way, according to reports in financial circles. Mills, it is said, will be erected for making steel by a new hardening process evolved at the company's metallurgical laboratories at Niagara Falls. The company, it is reported, may spend from \$10,000,000 to \$20,000,000 in developing this branch of the business, although as yet nothing official has been given out to indicate the extent of the plans. The corporation also proposes to expand the business of the Haynes Stellite Co., Kokomo, Ind., which it recently acquired.

The Chicago By-Products Coke Co., 122 South Michigan Avenue, Chicago, has let a contract to the Koppers Co. for one-story steel and concrete bins for coke storage, 22 x 100 ft., to be erected at Crawford Avenue and Thirty-first Street at a cost of \$75,000.

## TRAFFIC TROUBLES

### Canada Is Having Its Full Share—Tariff Shows Plan to Protect Industry

TORONTO, July 5.—The Canadian trade got poor news last week when it was announced that the plant of the Steel Co. of Canada at Hamilton would be down until such time as it could get sufficient quantities of coal and oil to operate again. Every effort will be made to keep enough coal in the coking plant so it will not close. This is the only place from which the Canadian trade was getting any local assistance in the matter of sheets, and it had been shipping a considerable tonnage of bar material. Its coal deposits are in Virginia, and the railroad situation shut off its supply of coal to such an extent that operation became impossible. The withdrawal of several of the large buyers of scrap material, such as the Steel company, has made a decided sag in the market, and dealers are not anxious to take on heavy melting, or cast iron.

Some cars arrived in Toronto during the week that had been placed on the way over 12 weeks ago in the Pittsburgh district. Canadian firms in increasing numbers are resorting to the practice of sending their own men across the line hunting their cars, and seeing what can be done to get them in motion toward the plants here. The scarcity of material is becoming a very serious matter, and the rate at which shipments come in from United States points does not hold out much encouragement for betterment.

#### Troubles in Export

Not only is the trouble met in securing raw materials, but in getting export shipments away. Much of this trade goes to New York for shipment, but recently shipments have had to be remade from there to Portland, Baltimore and even to Montreal in order to find shipping facilities.

Canadian exporters are also studying the conditions that have been brought about by the new Australian tariff, which becomes operative on the first of 1921.

## CANADIAN OUTPUT

### Furnaces Doing Well—Some Improvement in Transportation

TORONTO, ONT., July 5.—The Canadian market is experiencing a very brisk demand for practically every commodity which comes under the heading of "iron and steel." About the only drawback dealers in iron and steel materials are experiencing is the shortage of material. The switchmen's strike on the United States railways so demoralized traffic that very few shipments arrived at their destinations in Canada for upwards of two months. While some improvement is reported in transportation and material is arriving more freely than has been the case for some time, it is not coming in fast enough for dealers to keep their supply up with the demand. Many cars which were started on their way about the time the labor troubles on the American railways broke were either side-tracked or lost and these have not yet made their appearance on this side of the border. Not only finished materials have been held up on account of transportation troubles, but only a very limited amount of coal has been coming into this country, and steel plants and foundries in Ontario are now under the necessity of turning to their reserve supplies and in some instances these, too, have been consumed. On account of the shortage of fuel, the Steel Company of Canada, Hamilton, Ont., has been forced to close down its entire plant for one week and previous to its closing down the company was operating on a very limited basis. The production of iron and steel in Canada is greatly hampered by the shortage of fuel and manufacturers are unable to turn out anything like the material for which they have orders on their books. Even if the companies were in a position to operate their

Many firms, especially makers of agricultural implements, have built up a large trade with that country. The new tariff is a formidable affair. Some of the provisions will show this. For instance, reapers and binders, under the new ruling, pay under the British preference, £6 10s., under the intermediate tariff £9 10s., and under the general tariff £10, or an ad valorem duty of 30 per cent, 40 per cent or 45 per cent, depending upon which interpretation brings the greatest amount of revenue to the Government.

Mowers will pay under British preference £2 8s., under the intermediate £3 15s. and general £4, or an ad valorem of 30 per cent, 40 per cent or 45 per cent, depending, as in the other case, which application provides the greatest amount for the Government.

Other items in the new tariff make it plain that it is the intention to foster and build up a steel and iron business. Pig iron is to be taxed, under the British preference, 20s. per ton, under the intermediate 30s. per ton and general 40s. per ton. Ingots, blooms, slabs, billets, puddled bars, less finished than iron or steel bars, but more advanced than pig iron, except castings, per ton, British preference, 32s.; intermediate, 52s., and general, 65s. The fact that castings are allowed in for 10 per cent is taken to indicate that firms now exporting to Australia may be induced, as a start, to go there and do their assembling.

As a general thing, machinery will be taxed, British preference 27½ per cent, intermediate 35 per cent, and general 40 per cent, while automobiles come under 35 per cent, 45 per cent and 55 per cent.

So far none of the Canadian firms or the United States firms having plants here has announced its policy of meeting the new tariff. One thing is certain, that in the meantime—between now and the first of the year—all these companies are putting forth every effort to put as much material in their Australian warehouses as possible, before the new tariff becomes operative.

Arrangements have been made to supply power to the Baldwin plant at Toronto. When in full operation some 20,000 hp. will be necessary. Three large buildings, each 800 ft. in length, are being erected.

plants at full capacity, many of them could not turn out enough material to fill the orders on their books before the end of the present year.

The production of pig iron in most Canadian furnaces is going on nicely. The Algoma Steel Co., Sault Ste. Marie, Ont., announced that it has its entire plant of four furnaces blowing, and that the shortage of coke is causing no inconvenience, as it produces its own. The Canadian Furnace Co., Port Colborne, Ont., has its furnace in operation and is producing pig iron to capacity. It has enough fuel on hand to keep it going for several weeks. The Steel Co. of Canada, Hamilton, Ont., which had one furnace blowing, has been forced to bank it until a larger supply of fuel is secured. Toronto representatives of producers of pig iron state that they are receiving a number of inquiries for iron for last quarter delivery, but these are practically all for small tonnages and are from consumers who held off placing their contracts, when the producers first opened their books, expecting that there might be a decline in prices. In this they were disappointed and they are now coming into the market in order to cover for their last quarter requirements. While the furnaces are giving prompt delivery on iron contracted for some time ago, they have little or nothing available for spot delivery. The Toronto price of pig iron is: No. 2, \$52.70 per ton; No. 1, \$53.80 and malleable \$53.80. The Montreal prices are from \$1.50 to \$2 per ton higher.

American Minister A. G. Schmedeman has reported from Christiana, Norway, that the report of the Norwegian Statistical Bureau shows that that country has on hand 300,000 tons of coal, 45,000 tons of coke, and 5000 tons of cinders. It has received 125,000 tons per month, when the normal amount should be 200,000 tons per month.

# Action in Basing Case Complaint is Urged

Western Association of Rolled Steel Consumers Files  
Brief, Asserting that Far-Reaching Changes in  
Trade Conditions Threaten Serious Consequences

**I**N the case growing out of the complaint of the Western Association of Rolled Steel Consumers against the United States Steel Corporation and other steel companies before the Federal Trade Commission at Washington, the association through its attorneys, Pickering & Rieser, have filed at Washington a supplemental brief setting forth that delay in the decision is hurtful and that changes in trade conditions now render a further statement necessary. In the beginning the document says:

"This proceeding has been pending for a year. The delay leads us to the conclusion that your commission has encountered unusual difficulties in solving the issues. At the time of the hearing, public and private interests were suffering from the effects of the unfair and illegitimate practice known as 'Pittsburgh plus.' Since the hearing, violent and far-reaching changes in trade conditions threaten a serious aggravation of the situation.

## Proposed Increases in Freight Rates

"The railroads are asking freight rate increases of from 30 to 50 per cent. Representatives of the steel companies have intervened on behalf of the railroads in this request. Applicants are in favor of any increase in freight rates necessary to enable the railroads to render adequate service.

"However, when such increases become effective they will automatically be added to the price of steel manufactured and delivered in the Chicago, Birmingham and Duluth districts. Millions upon millions of dollars accruing from these rate increases (granted for the benefit of the railroads) will be appropriated by the steel companies outside the Pittsburgh district FOR ABSOLUTELY NO SERVICE WHATEVER AND BEARING NO RELATION TO THE COST OF PRODUCTION. Bear in mind that 'Pittsburgh plus' is composed of two elements, *i.e.*, the 'Pittsburgh base' and 'The plus.' The increased cost of ore transportation—a cost of production—will be covered by an increase in the market price at Pittsburgh, or in other words, the Pittsburgh base, and on top of that the theoretical freight rate on the steel product will be arbitrarily added to 'The plus' on steel manufactured and delivered at Chicago, Birmingham and Duluth.

## Consumer and Public Pay

"Not only will the consumer and the public pay the freight increase twice over, but the freight increase which is added to 'the plus' is not only unearned and not an increased cost of production, but is an arbitrary surcharge added to the surfeit of high prices which neither logic nor reason can justify.

"Upon the basis of the Chicago district production, an increase of 50 per cent in freight rates will involve a price increase added to 'the plus' alone amounting to \$27,000,000 annually.

"As an interesting corollary, various steel producers intervene and pray that instead of a horizontal increase in freight rates on iron ore, a joint tariff between the roads from the mine to the Lake and the roads from the lower Lake ports to the mills be inaugurated, by which the former gives to the latter the major part of the increase. The lower Lake ports being the points of low production costs, the effect of the proposal is to deprive them of their natural advantages and discourage new mills from locating in the Chicago district.

"We were told upon the hearing in this case that the respondents were the champions of competition, of the free play of the law of supply and demand, and

the preservation of natural advantages. 'Pittsburgh plus' was referred to as conforming wholly with that position and a fair sample of their handiwork. We submit that the above mentioned intervention of the steel interests in the freight question is on a parity with 'Pittsburgh plus' and successfully challenges the integrity of respondent's defense to these applications."

## The Chicago Demand

The brief refers to the argument made upon the hearing sometime ago that the "Pittsburgh plus" was economically sound because the supply in the Chicago district was less than the demand. The brief states that since the hearing the Chicago district mills have been rapidly approaching the demand in that district.

The brief next proceeds to argue that the issues present no practical difficulties. It is asserted that "the 'plus' distinguishes the steel trade from trade in any other commodity and that the practice complained of is within the inhibition of the statutes invoked." Quoting Justice Brandeis in his dissenting opinion in the case of the Federal Trade Commission against Anderson Gratz et al, the brief says the power of the commission is "prophylactic, to anticipate and avert the consequences which might develop within the inhibition of anti-trust laws."

"We are not called upon," says the brief, "and cannot prove our case upon preliminary hearing, but are required to and can make only a *prima facie* case. That has been done."

The brief next argues that the policy of the commission has been in accord with the Congressional purpose, and "such policy should be rigidly adhered to until the courts catch up with expressed public policy, and, failing that, until the necessity for further and adequate legislation is demonstrated."

In conclusion, the brief says:

## Courts Catching Up

"The 'good trust' doctrine was further advanced by the recent decision of the same court in United States vs. United States Steel Corporation, 40 Sup. Ct. 293. But that case was decided by a minority of the court. One of the justices who did not participate wrote the dissenting opinion in the Anderson Gratz case above quoted from. And in that case there were two dissents and one justice concurring only in the result. The courts are catching up.

"We refer to the above because we believe it to be a situation of vital import. Those who believed that the anti-trust act was too drastic, that it was destructive of trade and commerce, concurred with those who believed that the policy of competition needed additional safe guards, in creating the Federal Trade Commission. That commission was to have a dual purpose; to anticipate and avert the evils of monopoly and trade restraint; and to stand between the great commercial organizations and the anti-trust act by terminating prohibited practices before the penalties of that act became applicable. And now there are those who say that the decision in the Anderson Gratz case 'squints' at the proposition that the powers of the commission cannot be invoked until the practices complained of have reached a stage within the prohibition of the anti-trust act. The decision does not so hold. It expressly reserves that question for future consideration, and goes off on an anomalous question of pleading. And considering the irrefutable argument of Mr. Justice Brandeis, and the indicated tendency of the court to catch up with the intent and purpose of legislation in the interest of competition, we do not believe that it will so hold when the issue is presented."

# Iron and Steel Export Increase in May

Larger Exports of Machinery Constitute an Important Factor—Imports Show a Steady Upward Tendency—Japan Continues a Leading Customer of the United States

WASHINGTON, July 6.—The May figures of iron and steel exports reveal significant increases over the preceding month as well as over May, 1919, although the tonnage of exports show a decline by comparison with last year's figures. The import figures again reveal a steady upward tendency.

A heavy increase in machinery exports was chiefly responsible for the increase in the value of our steel outgo. Steel products did not keep pace with these. As a result, there was a decline in tonnage.

| Imports of Iron and Steel   |        |            |               |
|-----------------------------|--------|------------|---------------|
|                             |        | Gross Tons |               |
|                             |        | May        | Eleven Months |
|                             |        | 1919       | 1920          |
| Ferromanganese              |        | 3,981      | 22,206        |
| Ferrosilicon                |        | 260        | 1,538         |
| All other pig iron          |        | 2,168      | 14,295        |
| Scrap, including tin        | 10,441 | 5,851      | 90,524        |
| Bar iron                    |        | 12         | 76            |
| Structural iron and steel   |        | 155        | 64            |
| Steel billets without alloy |        | 182        | 1,226         |
| All other billets           |        | 97         | 370           |
| Steel rails                 | 4,878  | 7,359      | 14,994        |
| Sheets and plates           | 108    | 7          | 733           |
| Tin and terne plates        | 1      | 38         | 49            |
| Wire rods                   | 22     | 171        | 1,978         |
| Total                       | 18,324 | 34,976     | 171,136       |
| Manganese ore and oxide of  | 19,644 | 56,586     | 440,902       |
|                             |        |            | 243,572       |

Figures compiled by the Department of Commerce show an exportation of all manufactures of iron and steel in May, 1920, totaling \$99,461,058 against \$87,496,643 in April, 1920, and \$86,899,126 in May, 1919. An increase of \$12,000,000 in the May, 1920, exports of machinery over May, 1919, is the chief item of this gain. Tin plate exports also gained \$1,000,000 over the preceding year, while bars and rods went up \$2,000,000, and pipe \$400,000, in round numbers. The chief decreases approximate \$1,500,000 in rails, \$1,000,000 in structural steel, \$1,000,000 in billets, \$800,000 in pig iron, \$200,000 in wire, while sheets and plates remained practically stationary.

For the 11 months period ending with May, 1920,

| Exports, January, 1919, to May, 1920 |                    |          |                        |
|--------------------------------------|--------------------|----------|------------------------|
| Gross Tons                           |                    |          |                        |
|                                      | All Iron and Steel | Pig Iron | Semi-finished Material |
| January, 1919                        | 360,456            | 35,793   | 11,594                 |
| February                             | 234,793            | 20,178   | 10,407                 |
| March                                | 344,506            | 22,054   | 8,176                  |
| April                                | 408,204            | 16,300   | 11,488                 |
| May                                  | 447,050            | 32,233   | 20,771                 |
| June                                 | 544,580            | 39,540   | 46,016                 |
| July                                 | 287,823            | 38,373   | 21,318                 |
| August                               | 396,743            | 36,071   | 36,162                 |
| September                            | 363,505            | 18,991   | 37,513                 |
| October                              | 302,456            | 14,108   | 20,713                 |
| November                             | 295,045            | 21,429   | 13,211                 |
| December                             | 254,676            | 14,612   | 21,538                 |
| Total                                | 4,239,837          | 309,682  | 258,907                |
| January, 1920                        | 333,601            | 18,468   | 19,937                 |
| February                             | 308,185            | 15,739   | 22,693                 |
| March                                | 417,216            | 22,740   | 30,444                 |
| April                                | 395,120            | 14,608   | 19,032                 |
| May                                  | 420,359            | 13,032   | 16,370                 |

the exports of the various lines of iron and steel manufactures aggregated only \$843,831,472, or \$100,000,000 less than the 1919 figures for the corresponding period—\$943,984,871. It is interesting to note that the figures for the same period of 1918 were almost another \$100,000,000 higher—\$1,041,693,038. The tonnage of iron and steel exports in May, 1920, again went over the 400,000 mark. In April, 1920, it had slumped to 395,120 gross tons, while in May it went up to 420,359 tons.

This figure, however, is still 27,000 below the May, 1919, total of 447,050 tons. For the 11 months ending with May, 1920, the total tonnage of iron and steel exported was 3,820,271 gross tons, against 4,652,441 in the same period a year ago.

The exports of pig iron in various forms aggregated 13,032 tons in May, 1920, against 37,087 in May, 1919, and 14,575 tons in April, 1920. Only Canada maintained a fair total of receipts, her share in May, 1920, outgo being 2328 tons against 2797 in May, 1919. Italy received 2844 tons against 25,299 a year ago, and Japan 155 tons against 4569 in May, 1919. Billets, ingots and blooms dropped from 20,771 tons in May, 1919, to 16,370 in May, 1920, against the April, 1920, figures of 19,032 tons. Of the May, 1920, total the United Kingdom received 11,884 tons against 9975 tons a year ago, while France bought only 37 tons against 8060 tons in May, 1919. The export of steel rails also continued weak. The May, 1920, figure was

| Export of Iron and Steel                      |         |               |           |
|---|---------|---------------|-----------|
| Gross Tons                                    |         |               |           |
|   | May     | Eleven Months |           |
|   | 1919    | 1920          | 1919      |
| Ferromanganese                                | 545     | 134           | 2,054     |
| Ferrosilicon                                  | 4,309   | 34            | 7,861     |
| All other pig iron                            | 23,233  | 12,864        | 295,739   |
| Scrap   | 1,667   | 19,576        | 3,635     |
| Bar iron                                      | 5,172   | 3,573         | 78,700    |
| Wire rods                                     | 5,429   | 9,436         | 13,098    |
| Steel bars                                    | 45,094  | 62,982        | 438,562   |
| Billets, ingots and blooms, n.e.s.            | 20,771  | 16,370        | 865,679   |
| Bolts and nuts                                | 37,728  | 3,628         | 59,764    |
| Hoops and bands                               | 4,061   | 5,672         | 50,829    |
| Horseshoes                                    | 635     | 342           | 2,278     |
| Cut nails                                     | 406     | 344           | 3,296     |
| Wire nails                                    | 10,466  | 7,853         | 82,458    |
| All other nails including tacks               | 1,785   | 1,178         | 16,130    |
| Cast-iron pipes and fittings                  | 3,360   | 6,190         | 35,305    |
| Cast-iron pipes and fittings                  | 28,268  | 25,444        | 146,831   |
| Radiators and cast-iron house-heating boilers | 382     | 464           | 3,170     |
| Railroad spikes                               | 2,966   | 1,371         | 16,406    |
| Steel rails                                   | 76,134  | 58,497        | 554,700   |
| Galvanized sheets and plates                  | 9,506   | 7,490         | 71,768    |
| All other sheets and plates                   | 5,259   | 2,510         | 217,043   |
| Steel plates                                  | 54,400  | 74,710        | 669,769   |
| Steel sheets                                  | 20,852  | 16,409        | 139,478   |
| Ship plates, punched and shaped               | 1,377   | 3,431         | 18,866    |
| Structural iron and steel                     | 36,411  | 32,680        | 290,742   |
| Tin and terne plates                          | 14,186  | 19,426        | 224,642   |
| Barb wire                                     | 9,165   | 10,489        | 180,460   |
| All other wire                                | 14,383  | 17,262        | 157,178   |
|   | 447,050 | 420,359       | 4,652,441 |
|   |         |               | 3,820,271 |

58,497 against 76,134 in May, 1919, and 46,564 in April, 1920.

The chief purchaser of steel rails was Japan with 20,879 tons in May, 1920. That country's share in April, 1920, was 17,495 tons, and in May, 1919, 14,224 tons. A year ago France bought 14,874 tons of rails, and in May, 1920, only 679 tons. Exports of steel sheets totaled 16,409 tons in May, 1920, against 13,607 in April, 1920, and 20,852 in May, 1919. Here, again, Japan was the largest consumer, with 8450 tons in May of this year against 1512 tons for the same month last year. The strongest showing of the export totals covered steel plates, this figure rising to 74,710 tons in May, 1920, against 54,400 in May, 1919. The April figure, however, was 76,248. Here, again, it was Japan that consumed the lion's share. To that country went 23,925 tons of this year's May total against 15,731 a year ago. Canada received 15,088 tons against 11,521 a year ago.

Steel bars also showed an upturn. The May, 1920,

exports were 62,982 tons against 48,895 tons in April, 1920, and 45,094 in May, 1919.

The figures for machinery exports reveal the chief increases of the industry. In May, 1920, they totaled \$43,512,416. This was \$1,000,000 more than the April, 1920, figures of \$37,250,904, and \$12,000,000 in excess of the May, 1919, figures of \$31,524,342. For the 11 months ending May, 1920, the exports of machinery aggregated \$360,904,519, against \$299,576,884 in the same months a year ago.

A considerable portion of the increase in machinery exports is accredited to the outgo of engines and parts

### British Supplies of Ferrovanadium

The situation as to vanadium in Great Britain is depicted as follows by the London *Ironmonger*:

The cessation in the supply of ferrovanadium, an alloy of which the United States now holds the monopoly, is a serious matter for the makers of special steels as well as for motor engineers, who for certain parts of their machines require steel containing a proportion of the alloy. The deliveries of ferrovanadium began to fall off soon after the monopoly of its manufacture was acquired by a syndicate of American steelmakers about a year ago, and, although the shortage is attributed to difficulties in connection with

|  | Exports of Machinery |              | Eleven Months |               |
|--|----------------------|--------------|---------------|---------------|
|  | May                  | 1920         | 1919          | 1920          |
| Adding machines                        | \$363,106            | \$617,135    | \$3,002,572   | \$3,801,142   |
| Air compressing machinery              | 454,997              | 553,808      | 3,092,818     | 3,964,091     |
| Brewers' Machinery                     | 1,506                | 26,260       | 146,767       | 289,754       |
| Cash registers                         | 311,530              | 708,677      | 1,894,313     | 5,138,433     |
| Parts of                               | 26,212               | 48,125       | 156,358       | 328,255       |
| Concrete mixers                        | 7,597                | 72,217       | 227,102       | 461,487       |
| Cotton gins                            | 38,602               | 57,595       | 274,659       | 264,615       |
| Cream separators                       | 76,048               | 104,789      | 873,054       | 1,005,227     |
| Elevators and elevator machinery       | 741,317              | 203,941      | 2,889,803     | 1,836,143     |
| Electric locomotives                   | 37,000               | 491,585      | 315,458       | 1,464,157     |
| Gas engines, stationary                | 37,302               | 108,825      | 501,144       | 752,275       |
| Gasoline engines                       | 2,198,320            | 4,062,161    | 30,771,096    | 30,225,453    |
| Kerosene engines                       | 812,472              | 587,312      | 8,313,177     | 7,518,222     |
| Steam engines                          | 4,280,829            | 6,172,915    | 26,591,110    | 41,872,455    |
| All other engines                      | 172,336              | 798,849      | 4,585,507     | 3,049,892     |
| Boilers                                | 381,204              | 607,567      | 5,225,418     | 6,042,322     |
| Boiler tubes                           | 1,048,587            | 385,661      | 8,108,514     | 3,981,880     |
| All other parts of engines             | 1,822,763            | 1,821,349    | 23,858,485    | 19,979,586    |
| Excavating machinery                   | 214,803              | 92,773       | 959,477       | 1,283,065     |
| Milling machinery, flour and grist     | 239,938              | 145,402      | 1,820,923     | 1,521,932     |
| Laundry machinery, power               | 40,832               | 129,466      | 428,615       | 1,031,168     |
| All other                              | 37,189               | 53,640       | 313,154       | 442,139       |
| Lawn mowers                            | 48,394               | 41,759       | 338,075       | 342,037       |
| Lathes                                 | 513,067              | 829,434      | 8,414,867     | 8,068,936     |
| Other machine tools                    | 820,891              | 1,318,478    | 11,628,397    | 11,823,424    |
| Sharpening and grinding machines       | 396,977              | 276,057      | 5,589,116     | 3,976,075     |
| All other metal working machinery      | 2,559,084            | 1,919,421    | 24,289,272    | 21,658,433    |
| Meters, gas and water                  | 56,407               | 91,050       | 575,181       | 686,065       |
| Mining machinery, oil well             | 283,783              | 504,085      | 3,259,395     | 3,775,884     |
| All other                              | 910,832              | 630,975      | 8,483,949     | 7,866,526     |
| Paper-mill machinery                   | 408,888              | 144,049      | 2,338,658     | 2,500,825     |
| Printing presses                       | 208,760              | 806,683      | 2,235,489     | 5,583,618     |
| Pumps and pumping machinery            | 647,480              | 1,155,128    | 6,392,345     | 9,487,253     |
| Refrigerating and ice-making machinery | 231,904              | 255,111      | 1,885,669     | 2,177,744     |
| Road-making machinery                  | 98,866               | 187,227      | 749,603       | 1,056,048     |
| Sewing machines                        | 1,087,016            | 1,657,929    | 10,477,299    | 13,428,356    |
| Shoe machinery                         | 241,221              | 257,039      | 1,789,609     | 2,468,790     |
| Sugar-mill machinery                   | 541,081              | 925,740      | 9,387,282     | 14,461,438    |
| Textile machinery                      | 1,254,041            | 1,765,196    | 9,699,213     | 9,887,455     |
| Typesetting machines                   | 431,476              | 572,235      | 2,834,494     | 3,578,925     |
| Typewriting machines                   | 1,385,046            | 3,419,157    | 10,100,341    | 20,534,280    |
| Windmills                              | 96,405               | 178,887      | 836,863       | 1,274,530     |
| Wood-working machinery, saw mill       | 153,837              | 60,710       | 1,396,714     | 844,619       |
| All other                              | 190,851              | 312,154      | 1,328,116     | 3,065,009     |
| All other machinery and parts of       | 5,664,265            | 8,347,850    | 51,191,413    | 72,011,645    |
| Total                                  | \$31,524,342         | \$43,512,416 | \$299,576,884 | \$360,904,519 |

of engines, running through a series of varied classifications. The total May, 1920, exports of engines and engine parts was \$15,036,234 against \$10,791,088 in May, 1919. The April, 1920, figure was \$12,361,133. The total exportation of metal-working machinery of various kinds in May, 1920, was \$4,343,390 against \$4,290,019 in May, 1919, and \$3,613,721 in April, 1920.

The value of the wire exports, in various forms, totaled \$4,119,341 in May, 1920, against \$4,346,539 in May, 1919, and \$4,603,519 in April, 1920.

The figures for iron and steel imports showed a steady increase, both in tonnage and valuation. In May, 1920, they aggregated 34,976 tons against 18,324 tons in May, 1919, an increase of nearly 100 per cent. The April, 1920, total was 29,682 tons. For the 11-month period ending May, 1920, this total was 448,726 tons against 171,136 tons in the same months a year ago.

The value of these imports in May, 1920, was \$3,714,782, against \$3,307,050 in April, 1920, and \$1,513,449 in April, 1920. For the 11-month period in 1920 the total was \$32,155,163 against \$22,716,351 a year ago.

The importation of manganese ore and manganese oxide showed a significant bulge, rising to 56,586 tons in May, 1920, against 19,644 tons in May, 1919, and 35,088 tons in April, 1920.

O. F. S.

Joseph T. Ryerson & Son, Sixteenth and Rockwell streets, Chicago, have let contracts for the construction of a four-story brick office building, 67 x 125 ft., at 1548-56 North Rockwell Street. It will cost \$160,000.

production, it is strongly suspected that the monopolists are deliberately using their powers to give the American steelmakers an advantage over their competitors in this country. The only parcels of ferrovanadium which are now coming from America form part of old contracts, and there is none to be bought here, except small lots of surplus stock. Several British steelmakers hold large quantities, but they do not seem disposed to part with any of it, in spite of the fact that they could readily get 60s. per lb. for material which cost them probably less than 15s. per lb. Ferrovanadium is an important ingredient of high-speed steel, as it possesses valuable cleansing properties. Among others uranium and zirconium have been tried as substitutes for this purpose, but the results are reported to have been unsatisfactory. One or two makers who are under contract to supply high-speed steel to the automobile trade have been compelled, in order to meet their obligations, to buy it in the finished bar from the United States, involving them in rather serious financial loss. American steel is quoted substantially higher than the British article, and the unfortunate importers have, in addition, to bear the cost of freight and the loss on the exchange. The latest reports from America hint that the shipment of ferrovanadium may be resumed in September next, but manufacturers have had little faith in these trans-Atlantic statements.

Official data show that for the 10 months ended April 30, 1920, the ferrovanadium exports have been 144,863 lb. as compared with 634,926 lb. for the same period ended April 30, 1919, and 1,998,699 lb. for the corresponding 10 months in 1918.

The Mack Axle Works, Beaver Falls, Pa., recently was taken over by the Winchester Repeating Arms Co., New Haven, Conn., and now is in charge of A. R. Ray.

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# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

CHARLES S. BAUR, *Advertising Manager*

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## Psychology in Market Prices

It is a common view that unless there is "artificial control" market prices are made by "supply and demand." As a matter of fact the human element enters very largely into the making of prices of commodities and it is not a mere question of quantitative relations between that which is to be sold and that which is to be bought.

The phrase "demand and supply" contains two terms drawn from the market place, but commonly viewed as suggestive of manufacturing and consuming operations. That is, if we have a session, whether 30 minutes or an hour or five hours in duration, of two groups of men, sellers and buyers, the market declines if the offers are in excess or advances if the bids are in excess. That is not "demand and supply," but "demands and offerings." On the other hand, there is the viewpoint of production and consumption. Goods are produced and goods are consumed; hence "supplies and requirements" would be applicable; but again the phrase "demand and supply" does not fit that case.

"Demand and supply," furthermore, is misleading in the inference it carries that "demand" is the measure of requirements, whereas a moment's reflection reminds one that men at times seek to buy in excess of their requirements and at other times buy less than their requirements, there being forward buying or adding to stocks in one case and reduction of stocks in the other case. The other member of the phrase, "supply," connotes the quantity of material that exists for the purpose of sale, whether or not the owners offer it for sale at any particular time. Hence it is proper to speak of "demands and offerings" or of "requirements and supplies," but not of "demand and supply."

The difference between the quantity of material that is offered for sale and the quantity that constitutes the actual supply is made by what occurs in men's minds. The difference between what is sought for purchase and what is actually required is likewise made by what occurs in men's minds. Hence the market is in part made by what is in men's minds, and not wholly by the relation between production and consumption.

The mental influence in the making of markets has been particularly great of late because the gov-

erning influence of precedent is largely or wholly absent. If the price of a commodity goes "too high," the working of economic laws will force it down, while if the price goes "too low" it will be forced up. Ordinarily one has precedent, the testimony of statistics, to guide him in determining what price would be "too high" or "too low." The seller does not wish to bring about eventual demoralization to his market by seeking the temporary gain involved in a price that is "too high," nor is the buyer disposed to make purchases, while if the price becomes "too low" the seller is disposed to hold his goods back and the buyer is disposed to take everything he can get, and thus through men's minds taking account of precedents the market is kept within certain bounds at either end.

The stabilizing or regulating influence of high prices increasing the supply and decreasing the demand, or of low prices decreasing the supply and increasing the demand, has been very largely lacking of late. Men are not following the philosophy that used to govern them, before the war conditions and the after-war conditions caused them to abandon their regard for precedents or statistics. Deprived of these guides men buyers and sellers have followed notions which are not true guides. For instance, many have facilely concluded that the "decreased value of the dollar" is principally responsible for high prices, when obviously the decrease, whatever it may be, is a settled percentage and cannot explain at the same time why one commodity is double its pre-war price and another is quadruple its pre-war price, for the same dollar may be used—as far as it will go—toward the purchase of either commodity.

## Industrial Companies as Car Buyers

A significant development in the railroad situation is the purchase of freight cars by industrial companies, particularly steel manufacturers and blast furnace interests. One independent steel company in the East has bought a thousand cars and several others have purchased lots ranging from fifty to five hundred. While the purchase of rolling stock by industrial companies does not savor of altruism, but is dictated by motives of self-interest, the net result will be an improve-

ment in railroad transportation that will benefit the business of the whole country, help the railroads out of their dilemma and provide work for car shops, which have been operating at only slightly more than 10 per cent of capacity. The number of freight cars bought thus far by industrial companies is not large, totaling about 6200, but the movement has just begun and as far as it goes it will mitigate the car shortage.

Seventeen car manufacturing companies in the United States have a total capacity of 27,000 freight cars a month. With railroad buying up to this time of such small volume as to be almost negligible, the car companies, though ready to do their utmost in relieving the traffic situation, are compelled to keep most of their facilities in idleness. While private companies own many thousands of cars, the buyers in past years have been chiefly meat packers, fruit growers, livestock shippers and oil companies. A few steel companies own a considerable number; for example, the Carnegie Steel Co. has 1831 and the Lackawanna Steel Co. has 1859. But there are many large industrial corporations which own none. Some months ago there was talk of a "Buy-a-car" campaign, but nothing came of it, and such progress as has been made lately in inducing private companies to buy cars is due to the initiative of individual car builders.

### The Vanadium Situation

A misapprehension of the conditions existing in the American vanadium industry seems to prevail in Great Britain. According to comment reprinted elsewhere in this issue, British high-speed steelmakers and others using ferrovanadium believe there is discrimination because they are unable to obtain the kind of alloy they need. There is no question that the United States controls the supply of this essential material, but it is also a fact that many American steel makers are in the same position as the British.

The situation is about this: Because of certain temporary conditions in South America and transportation troubles here it is possible at present to produce in quantity only ferrovanadium having a high content of silicon. The alloy produced before this situation arose was one of low silicon content and easily usable in any steel making process. The high silicon alloy is adaptable to the electric furnace process for making high speed steel and also to the making of vanadium steels in the open-hearth furnace, but it cannot be used in the crucible process for high-speed steels of a relatively high vanadium content. A large percentage of the high speed steel made in the United States, probably ninety per cent is made in electric furnaces, but in Great Britain the crucible process prevails. Hence the British producer is at a disadvantage.

There is at present an unusual scarcity of vanadium ferroalloy of the old type. A few ferroalloy makers here and there are able now and then to produce small quantities of low silicon ferrovanadium, from the oxide obtained as a by-product in the radium industry, and these makers are able to obtain prices higher than those ruling

for the high silicon alloy. The supply is not equal to the world demand, however. It would seem that the recourse of the British producers is to adopt the electric furnace process for high-speed steels or to make the best shift possible until the supply of the old-time alloy is more plentiful, which seems to be assured in the not distant future.

The present situation not only testifies to the vital role which vanadium has assumed in the metallurgy of steel, but also to the great flexibility of the electric furnace in meeting the unusual problems that arise.

### Sheet and Tin Plate Scale Settled

The settlement at the Columbus conference of the matters in dispute between the independent sheet and tin plate manufacturers and the Amalgamated Association of Iron, Steel and Tin Workers is a highly satisfactory result. The suspension for an indefinite time of the independent sheet and tin plate plants would have been most serious just now, when the demand for the products of these mills exceeds their capacity. A shortage of tin plate would have been particularly unfortunate when the world needs every can of fruit and vegetables that can be turned out.

The reports of the conferences of the manufacturers and Amalgamated officials as presented by THE IRON AGE indicate that while there were sharp differences, there was also a spirit of fairness that was commendable, particularly at the Columbus conference, where concessions were made by both sides. While the union desired to extend its activities in organization work, it found the manufacturers stoutly opposed to such increase in its power, and it finally agreed to the continuance of the memorandum on this subject which was accepted by the manufacturers a year ago. This was really the principal point of discussion, as the details relating to wages were arranged with comparative ease. Neither at Columbus nor at Atlantic City was there anything to justify the reckless statements which were made in some quarters as to the proceedings. It not infrequently happens in labor controversies that outsiders incite violence and cause much more trouble than would occur if the principals to the controversy were allowed to adjust their own differences. Brickbat-throwing meddlers often cause bloodshed in times of strikes, and those who do not literally throw brickbats but indulge in unjust criticism and violent statements are guilty of conduct hardly less reprehensible.

Copper exports thus far this year have made a better showing than has been generally realized. To June 1, they have averaged 30,906 gross tons per month, which is in excess of the highest total for any month in 1919 or 1918. Last year the monthly average was only 19,000 tons. It is estimated that for the first half of this year the average will be not less than 30,000 tons per month. The noteworthy fact is that the present movement is not far from the pre-war record exports of about 32,000 tons per month in 1913. The war record was over 41,000 tons per month, in 1917. Ger-

many, which obtained no American copper in 1918 and 1919, now ranks fourth in copper imports from the United States, the leading shippers up to May 1 having been Japan, Great Britain and France in the order named. Japan has been receiving about 25 per cent of our exports and Germany about 9 per cent.

### Unions and the Steel Industry

In view of the recent compromise of the dispute between the American Federation of Labor and the Amalgamated Association, giving the Amalgamated Association a preponderance of authority in any attempts to organize the iron and steel industry, the prospects of there being any organization campaign at all are being discussed. Technically the compromise provides that the general committee authorized at the federation's Montreal convention of representatives of various unions of machinists, carpenters, bricklayers, and other craftsmen who are employed in relatively limited numbers in the iron and steel industry, may still be formed, but that in such event the Amalgamated Association shall have a 51 per cent vote in the counsels of the committee. In some quarters it is thought that the "compromise" is really a graceful backing down of the officials of the federation and that the committee is not going to be formed at all. The other part of the Montreal decision, that the old Fitzpatrick and Foster committee be disbanded, is of course to be carried out.

The campaign to organize the iron and steel industry had its inception at the American Federation of Labor convention in June, 1918. It is important to remember that the cause of this movement was then stated to be that the unorganized iron and steel industry stood as a great stumbling block to the further progress of the union movement. This suggests that the need for organizing the iron and steel industry was a need of the American Federation of Labor rather than of the workers in the industry.

The reason the iron and steel industry is not organized is that the men get along very well without organization. For the minimizing of labor troubles and labor unrest in industry generally the best single proposition has been and is that the men be paid by results. That is the common method of payment for skilled men in the iron and steel industry and it accounts largely for the fact that the industry is not organized. It was chiefly a refusal to follow this principle that caused the Homestead strike of 1892 and the elimination of the union from the Carnegie works. There were three main points in dispute, a reduction in the minimum of the sliding scale from \$25 for billets to \$23, a change from June 30 to Dec. 31 in the date of expiration of the scale, and reduction in such tonnage rates as applied to jobs where the output had been greatly increased through improvements made by the company. The strike has stood as a horrible example of what unionism may produce. About 3800 men were employed at Homestead and only about 321 were affected, directly or indirectly, by either the proposed change in tonnage rates or in the minimum of the sliding scale. The Homestead scale was a "special" scale, negoti-

ated entirely apart from the general scale in which the other manufacturers were interested.

There was no output limit at Homestead, but there was an output limit for the iron mill scales, which has survived to date. Until 1905 there were output limits in both the sheet and tin mill scales. It is a reasonable inference from the history of unionism in the iron and steel industry that unionism looks to limitation of output and concedes the point only when forced to do so.

It seems quite improbable that men who are paid by results, and paid well, will listen seriously to organization talk. As to the common labor, not paid by results, the organization movement that led to the strike of Sept. 22, 1919, and the strike itself indicate that the greatest results that could be secured with the common labor were secured by the radical or "red" preachings of that time, yet the strike failed, and the men would not take to such an effort if attempted again.

It seems reasonably plain, therefore, that no organization campaign in the iron and steel industry in the future is likely to succeed, and there is a decided balance of probability that none will be attempted. As to "payment by results," it is practically certain that the iron and steel manufacturers will find methods by which the system can be extended.

### CORRESPONDENCE

#### Steam versus Electric Drive Mills

*To the Editor:* On page 14 of your issue of July 1 there appears a resumé of the discussion "Steam Versus Electric Drive Mills."

This extract does not mention the method of determining the steam consumption used, which was by isolating the boilers supplying the engine and measuring the water used during a period of 17 hr.

The extract is also incorrect in that the consumption of steam per ton of steel rolled is 1120 lb., when the steam used by the low pressure turbine is credited to the blooming mill engine.

The opportunities for making this test were exceptionally favorable for securing accurate data on the much discussed "quantity of steam required for a blooming mill," that for the benefit of those in the steel industry who would use the above information, the correction should be noted.

D. EPPESHEIMER,  
Chief Engineer, American Rolling Mill Co.  
Middletown, Ohio.

In the territory of the Youngstown Car Service Commission there are 1900 bad order cars awaiting repairs, states D. T. Murray, chairman of the commission. These cars are scattered at Youngstown, Warren, Niles, Girard, New Castle, Sharon, Farrell, Struthers, Lowellville and other points in the Mahoning and Shenango valleys. Many of the cars are loaded and have only minor defects which can be repaired in a short time and the cars consigned to destination. Carriers are concentrating their repair work on those cars which need less attention, leaving the more seriously defective for such times as they can be shopped.

The New London Broaching Machine & Tool Co., New London, Conn., has incorporated to deal in broaching machines, etc. The incorporators are E. L. Streeter, Jr., M. E. Infiorati and Lewis Crandall, all of New London.

# CONTENTS

|   |            |
|---|------------|
| <b>Temperature Ranges in Hardening Steel.....</b>   | <b>67</b>  |
| Comparison of Scleroscopic Results and Hardening Temperatures—Effect of Overheating and Enlargement of the Grain                |            |
| <b>Co-ordination of Sales and Production.....</b>   | <b>68</b>  |
| Application of Scientific Methods Considered by Taylor Society—Plans of Winchester Repeating Arms Co.                           |            |
| <b>Agreement With Amalgamated Is Renewed.....</b>   | <b>69</b>  |
| Mutual Concessions Made by Manufacturers and Representatives of the Union—Memorandum of Last Year Remains Unchanged             |            |
| <b>Accident Prevention in the Forge Shop.....</b>   | <b>73</b>  |
| How to Stimulate Interest and Enlist the Co-operation of Employees—Devices for Eliminating Hazards                              |            |
| <b>Standardization of Die Blocks.....</b>   | <b>75</b>  |
| Sizes, Kind and Quality of Steel, Method of Forging and Annealing and Hardening Treatment                                       |            |
| <b>Action Urged in Basing Case Complaint.....</b>   | <b>85</b>  |
| Western Association of Rolled Steel Consumers Asserts Changes in Trade Conditions Threaten Serious Consequences                 |            |
| <b>Iron and Steel Exports in May.....</b>   | <b>86</b>  |
| Larger Exports of Machinery Constitute an Important Factor—Steady Upward Tendency in Imports                                    |            |
| <b>Pig Iron Production in June.....</b>   | <b>92</b>  |
| For the Month, 3,043,540 Tons—For the Half Year, 18,138,986 Tons—June Daily Output 5100 Tons Above May's                        |            |
| Universal Grinder and Button Die Grinding Attachment .....  |            |
| Leather Belting Film Story.....   | 70         |
| A New Molybdenum Company.....   | 70         |
| Shortage of Railroad Equipment at Youngstown .....  | 71         |
| Permits Required for Shipments in Chicago .....   | 71         |
| Stocks of Coal Decreased .....  | 71         |
| Imports of Ferromanganese and Manganese Ore .....   | 71         |
| Foundry Exhibit at Columbus .....   | 71         |
| Automatic Hob Grinding Machine.....   | 72         |
| Loans to Railroads from Revolving Fund..  | 72         |
| Surplus Property Activities .....   | 72         |
| Discovery of Vanadium Ore Deposits, While the Bessemer Is Blowing.....  | 72         |
| Ford Blast Furnace Safety Features.....   | 76         |
| Cleveland Milling Machine Co. Reorganized .....   | 77         |
| Heavy Hot-swaging Machine .....   | 78         |
| One Best Way to Do Work.....  |            |
| Rubber Belting for Hot Clinkers.....  | 78         |
| Hanna & Co. Acquire Buffalo Union Furnaces .....  | 79         |
| Another Drilling Test .....   | 79         |
| Open Price Plan Opposed.....  | 79         |
| Freight Rate Arguments Ended.....   | 79         |
| In the Machine Tool Business 37 Years....   | 80         |
| Ojibway Plant of Canadian Steel Corporation .....   | 81         |
| Heavy Duty Grinding and Buffing Machines  | 82         |
| Puddlers' Wages Under New Contract .....  | 83         |
| Conditions in Canada .....  | 84         |
| Editorials .....  | 88         |
| Psychology in Market Prices—Industrial Companies as Car Buyers—Vanadium—Sheet and Tin Plate Scale—Unions and the Steel Industry |            |
| Steam Versus Electric Drive Mills.....  | 90         |
| Lake Ore Shipments in June.....   | 105        |
| Foreign Market Conditions.....  | 106, 112   |
| Iron and Industrial Stocks.....   | 107        |
| <b>Iron and Steel Markets.....</b>  | <b>94</b>  |
| <b>Comparison of Prices.....</b>  | <b>95</b>  |
| <b>Non-Ferrous Metal Markets.....</b>   | <b>108</b> |
| <b>Prices Finished Iron and Steel, f.o.b. Pittsburgh.....</b>   | <b>109</b> |
| <b>Personal Notes .....</b>   | <b>110</b> |
| <b>Obituary Notes .....</b>   | <b>111</b> |
| <b>Machinery Markets and News of the Works.....</b>   | <b>113</b> |
| <b>New York Jobbers' Prices .....</b>   | <b>122</b> |

## PIG IRON OUTPUT HEAVIER

### Production in June 5139 Tons More Daily Than in May

#### Net Gain of Seven Furnaces—Ferromanganese Output Largest This Year

The recovery in the blast furnace industry which set in in May progressed still further in June so that the rate of production is not far from that which obtained in the second two months of the year. The recovery in June from the low output in April has now reached about 66 per cent, but the June figures, while not equal to those of the heavy production in March, are nearly on a par with the February output and considerably exceed that for January.

The production of coke and anthracite blast furnaces in June, a 30-day month, amounted to 3,043,540 gross tons, or an average of 101,451 tons per day, as compared with 2,985,682 tons, or 96,312 per day in May, a 31-day month, and 2,739,797 tons, or 91,327 tons per day in April, a 30-day month. The June output is only about 7500 tons per day less than the large production in March.

The output of manganese alloys was 34,751 tons, or next to the largest for any month this year. The output of ferromanganese, however, was 26,265 tons, or the largest thus far this year.

#### Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for June, and the three months preceding:

| Pig Iron Production by Districts—Gross Tons    |                   |                  |                   |                   |
|--|-------------------|------------------|-------------------|-------------------|
|  | June<br>(30 days) | May<br>(31 days) | Apr.<br>(30 days) | Mar.<br>(31 days) |
| New York .....                                 | 221,667           | 220,820          | 175,708           | 210,036           |
| New Jersey .....                               | 7,494             | 9,366            | 6,181             | 4,789             |
| Lehigh Valley .....                            | 80,680            | 89,699           | 89,046            | 90,271            |
| Schuylkill Valley .....                        | 82,232            | 97,013           | 85,617            | 101,399           |
| Lower Susquehanna and Lehigh Valley .....      | 63,810            | 68,340           | 60,505            | 43,136            |
| Pittsburgh district .....                      | 664,345           | 652,940          | 641,159           | 746,933           |
| Shenango Valley .....                          | 93,975            | 62,297           | 74,054            | 162,845           |
| Western Pennsylvania .....                     | 165,907           | 184,541          | 181,446           | 192,500           |
| Maryland, Virginia and Kentucky .....          | 103,219           | 114,765          | 106,914           | 101,248           |
| Wheeling district .....                        | 116,967           | 119,015          | 105,191           | 143,905           |
| Mahoning Valley .....                          | 267,816           | 177,685          | 169,496           | 306,720           |
| Central and Northern Ohio .....                | 288,789           | 287,544          | 272,896           | 315,551           |
| Southern Ohio .....                            | 65,547            | 74,078           | 65,922            | 78,486            |
| Chicago district .....                         | 472,609           | 477,878          | 388,063           | 538,215           |
| Mich., Minn., Mo., Wis., Colo. and Wash. ..... | 116,552           | 111,760          | 97,488            | 111,552           |
| Alabama .....                                  | 209,087           | 212,124          | 191,389           | 204,816           |
| Tennessee .....                                | 23,444            | 25,817           | 24,722            | 23,582            |
| Total .....                                    | 3,043,540         | 2,985,682        | 2,739,797         | 3,375,984         |

#### Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the following totals of steelmaking iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

|            | Production of Steel Companies—Gross Tons |           |           | Spiegeleisen and ferromanganese |        |        |
|------------|--|-----------|-----------|---------------------------------|--------|--------|
|            | 1918                                     | 1919      | 1920      | 1918                            | 1919   | 1920   |
| Jan. ....  | 1,756,208                                | 2,430,022 | 2,232,455 | 30,695                          | 32,787 | 23,957 |
| Feb. ....  | 1,620,254                                | 2,209,470 | 2,181,679 | 26,114                          | 28,105 | 28,038 |
| Mar. ....  | 2,349,419                                | 2,277,507 | 2,480,668 | 39,122                          | 26,644 | 35,275 |
| Apr. ....  | 2,411,488                                | 1,838,677 | 1,968,542 | 35,511                          | 17,308 | 27,628 |
| May. ....  | 2,513,577                                | 1,586,803 | 2,128,720 | 54,633                          | 14,604 | 33,407 |
| June. .... | 2,407,166                                | 1,655,944 | 3,043,540 | 44,844                          | 14,254 | 34,751 |
| July. .... | 2,456,693                                | 1,906,604 | .....     | 51,762                          | 14,805 | .....  |
| Aug. ....  | 2,509,357                                | 2,108,566 | .....     | 54,009                          | 17,419 | .....  |
| Sept. .... | 2,507,381                                | 1,828,613 | .....     | 66,275                          | 20,631 | .....  |
| Oct. ....  | 2,594,277                                | 1,295,690 | .....     | 70,379                          | 20,238 | .....  |
| Nov. ....  | 2,501,867                                | 1,727,656 | .....     | 59,638                          | 19,964 | .....  |
| Dec. ....  | 2,524,794                                | 1,916,249 | .....     | 49,435                          | 15,718 | .....  |

#### Capacities in Blast July 1

The following table shows the number of furnaces in blast July 1 in the different districts and their capacity, also the number and daily capacity in gross tons of furnaces in blast June 1:

| Location of Furnaces.       | Coke and Anthracite Furnaces in Blast |        | Capacity per day |
|-----------------------------|---------------------------------------|--------|------------------|
|                             | July 1                                | June 1 |                  |
| New York:                   |                                       |        |                  |
| Buffalo .....               | 22                                    | 19     | 7,150            |
| Other New York .....        | 4                                     | 2      | 225              |
| New Jersey .....            | 4                                     | 1      | 160              |
| Pennsylvania:               |                                       |        |                  |
| Lehigh Valley .....         | 18                                    | 11     | 2,510            |
| Spiegeleisen .....          | 2                                     | 2      | 270              |
| Schuylkill Valley .....     | 14                                    | 11     | 2,740            |
| Lower Susquehanna .....     | 8                                     | 4      | 1,300            |
| Ferro .....                 | 2                                     | 1      | 55               |
| Lebanon Valley .....        | 9                                     | 2      | 375              |
| Ferro .....                 | 1                                     | 3      | 195              |
| Pittsburgh District .....   | 53                                    | 47     | 21,635           |
| Ferro and Spiegel .....     | 5                                     | 4      | 510              |
| Shenango Valley .....       | 27                                    | 10     | 3,130            |
| Western Penn. ....          | 27                                    | 19     | 5,530            |
| Spiegel .....               | 1                                     | .....  | 1                |
| Maryland .....              | 5                                     | 5      | 1,490            |
| Wheeling District .....     | 15                                    | 10     | 3,900            |
| Ohio:                       |                                       |        |                  |
| Mahoning Valley .....       | 27                                    | 24     | 8,930            |
| Central & North .....       | 26                                    | 23     | 9,625            |
| Southern .....              | 16                                    | 13     | 2,285            |
| Illinois and Indiana .....  | 40                                    | 30     | 15,930           |
| Ferro .....                 | 1                                     | 1      | 70               |
| Mich., Wis., and Minn. .... | 14                                    | 8      | 2,745            |
| Colo., Mo., and Wash. ....  | 8                                     | 4      | 1,130            |
| Total .....                 | 435                                   | 302    | 101,500          |
|                             |                                       |        | 295              |
|                             |                                       |        | 98,350           |

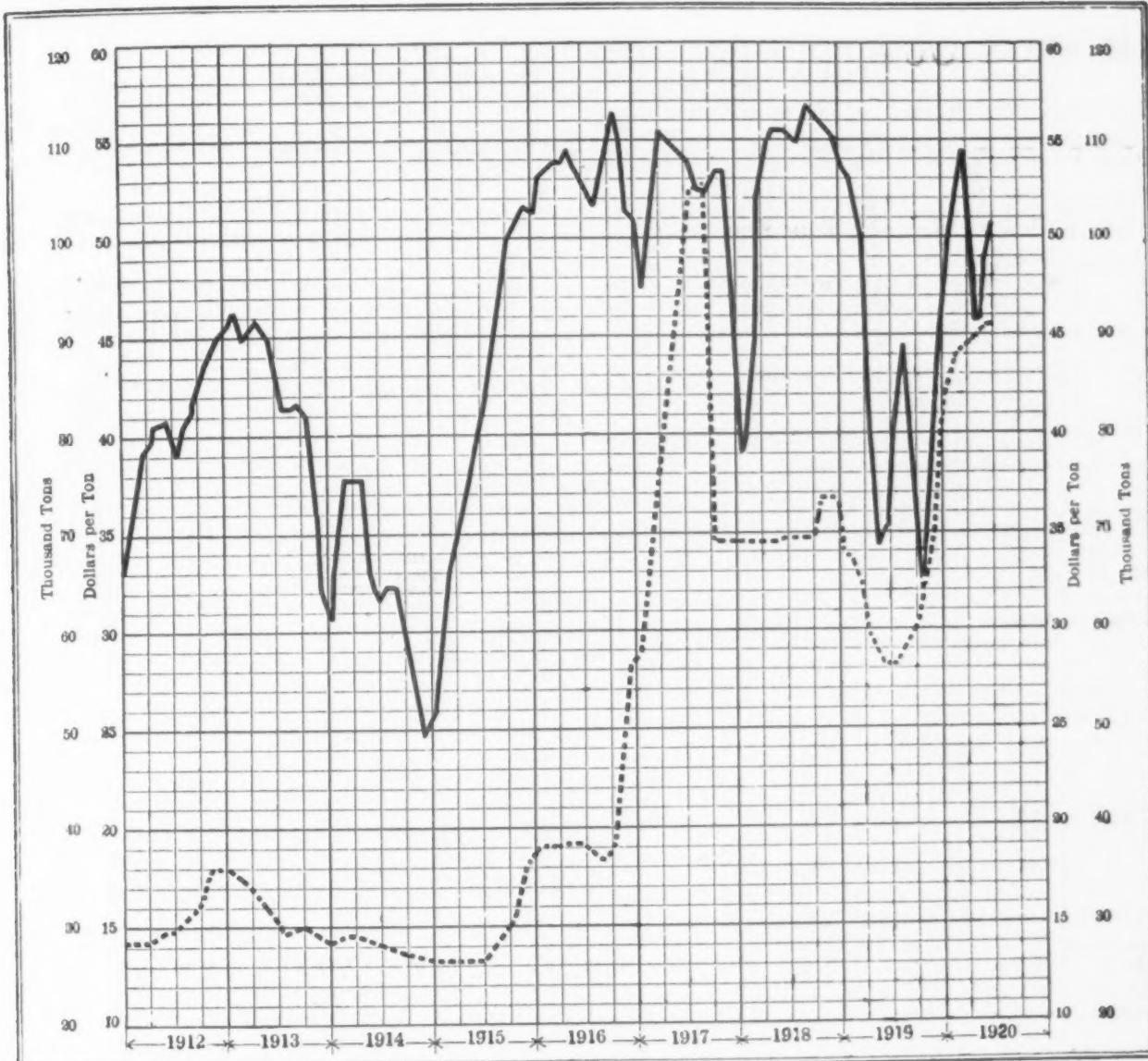
#### Diagram of Pig Iron Production and Prices

The fluctuations in pig iron production from 1910 to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnace at Chicago, and No. 2 X at Philadelphia. They are based on the weekly quotation of THE IRON AGE.

| Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1916—Gross Tons |            |            |            |            |            |  |
|--|------------|------------|------------|------------|------------|--|
|  | 1916       | 1917       | 1918       | 1919       | 1920       |  |
| Jan. ....  | 3,185,121  | 3,150,938  | 2,411,768  | 3,302,260  | 3,015,181  |  |
| Feb. ....  | 3,087,212  | 2,645,247  | 2,319,299  | 2,940,168  | 2,978,879  |  |
| Mar. ....  | 3,337,691  | 3,251,352  | 3,213,091  | 3,090,243  | 3,375,907  |  |
| Apr. ....  | 3,227,768  | 3,334,960  | 3,288,211  | 2,478,218  | 2,739,797  |  |
| May. ....  | 3,361,073  | 3,417,340  | 3,446,412  | 2,108,056  | 2,985,682  |  |
| June. ....   | 3,211,588  | 3,270,055  | 3,323,791  | 2,114,863  | 3,043,540  |  |
| 1 <sub>2</sub> yr. ....  | 19,410,453 | 19,069,892 | 18,002,572 | 16,033,808 | 18,138,986 |  |
| July. ....   | 3,224,513  | 3,342,438  | 3,420,988  | 2,428,541  | .....      |  |
| Aug. ....  | 3,203,713  | 3,247,947  | 3,389,585  | 2,743,388  | .....      |  |
| Sept. ....   | 3,202,366  | 3,133,954  | 3,418,270  | 2,487,965  | .....      |  |
| Oct. ....  | 3,508,849  | 3,303,038  | 3,486,941  | 1,863,558  | .....      |  |
| Nov. ....  | 3,311,811  | 3,205,794  | 3,354,074  | 2,392,350  | .....      |  |
| Dec. ....  | 3,178,651  | 2,882,918  | 3,433,617  | 2,633,268  | .....      |  |
| Total, yr. ....  | 39,039,356 | 38,185,981 | 38,506,047 | 30,582,878 | .....      |  |

\*These totals do not include charcoal pig iron. The 1918 production of this iron was 347,224 tons.

The furnaces blown in include one Bethlehem furnace in the Lehigh Valley; two New Castle furnaces of the Carnegie Steel Co., one Shenango furnace and the Sharpsville furnace in the Shenango Valley; one Josephine furnace in western Pennsylvania; the Martin's Ferry furnace of the Wheeling Steel & Iron Co. in the Wheeling district; three Haseltown furnaces of the Republic Iron & Steel Co., two Hubbard furnaces, one Jeanette furnace of the Brier Hill Steel Co. and two Ohio furnaces of the Carnegie Steel Co. in the Mahoning Valley; one Central furnace of the American Steel



The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Price Per Ton of No. 2 Southern Pig Iron at Cincinnati, Local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

& Wire Co., one furnace of the Columbus works of the American Rolling Mill Co., and one River furnace in central and northern Ohio; Star furnace in southern Ohio; one Gary furnace and one Madeline furnace in the Chicago district; one Missouri furnace in Missouri and one Allen's Creek furnace in Tennessee.

Among the furnaces blown out or banked are the Buffalo A furnace in the Buffalo district; one Musconetcong furnace in New Jersey; Vesta furnace in the lower Susquehanna Valley; one Robesonia furnace and one Bethlehem Steel Co. furnace in the Lebanon Valley; Ella and Fannie furnaces in the Shenango Valley; one Johnstown furnace of the Cambria Steel Co. and one Josephine furnace in western Pennsylvania; one Low Moor furnace in Virginia; one River furnace in central and northern Ohio, the Milton furnace and the Union furnace in southern Ohio, one Calumet furnace and one Gary furnace in the Chicago district and the La Follette furnace and the Standard furnace in Tennessee.

### New Puddling Rate

YOUNGSTOWN, OHIO, July 6.—The new puddling rate for July-August is \$17.26 per ton, based on a 3.25c. card under the new wage agreement, and is increased by \$2.38 over the May-June scale. In the new sheet and tin plate contract, tin house employees, tinners, redpippers and risers rates will advance in selling price above the base of \$3.50 per 100 lb.

### Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from June, 1919, is as follows:

#### Daily Rate of Pig Iron Production by Months—Gross Tons

|               | Steel Works | Merchant | Total   |
|---------------|-------------|----------|---------|
| June          | 51,865      | 18,630   | 70,495  |
| July          | 61,503      | 16,837   | 78,340  |
| August        | 68,018      | 20,478   | 88,496  |
| September     | 60,954      | 21,978   | 82,932  |
| October       | 41,796      | 18,319   | 60,115  |
| November      | 57,589      | 22,156   | 79,745  |
| December      | 61,815      | 23,129   | 84,944  |
| January, 1920 | 72,015      | 25,249   | 97,264  |
| February      | 75,230      | 27,490   | 102,720 |
| March         | 80,021      | 28,879   | 108,900 |
| April         | 65,168      | 26,159   | 91,327  |
| May           | 68,668      | 27,644   | 96,312  |
| June          | 73,659      | 27,792   | 101,451 |

The figures for daily average production, beginning with January, 1914, are as follows:

#### Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1914—Gross Tons

|       | 1914   | 1915    | 1916    | 1917    | 1918    | 1919    | 1920    |
|-------|--------|---------|---------|---------|---------|---------|---------|
| Jan.  | 60,808 | 51,659  | 102,746 | 101,643 | 77,799  | 106,525 | 97,264  |
| Feb.  | 67,453 | 59,813  | 106,456 | 94,473  | 82,825  | 105,006 | 102,720 |
| Mar.  | 75,738 | 66,575  | 107,667 | 104,882 | 103,648 | 99,685  | 108,900 |
| Apr.  | 75,655 | 70,550  | 107,592 | 111,165 | 109,607 | 82,607  | 91,327  |
| May   | 67,506 | 73,015  | 108,422 | 110,238 | 111,175 | 68,002  | 66,312  |
| June  | 63,916 | 79,361  | 107,053 | 109,002 | 110,793 | 70,495  | 101,451 |
| July  | 63,150 | 82,691  | 104,017 | 107,820 | 110,354 | 78,340  | ...     |
| Aug.  | 64,363 | 89,668  | 103,346 | 104,772 | 109,341 | 88,496  | ...     |
| Sept. | 62,753 | 95,085  | 106,745 | 104,465 | 113,942 | 82,932  | ...     |
| Oct.  | 57,361 | 100,822 | 113,189 | 106,550 | 112,482 | 60,115  | ...     |
| Nov.  | 50,611 | 101,244 | 110,394 | 106,859 | 111,802 | 79,745  | ...     |
| Dec.  | 48,896 | 103,333 | 102,537 | 92,997  | 110,762 | 84,944  | ...     |

# Iron and Steel Markets

## CONGESTION NOT RELIEVED

### June Pig Iron Output, However, Increased 5000 Tons a Day

### Mills May Shut Down to Clear Freight—Easier Market Abroad

Pig iron output increased in June, showing that the net result of all the shifts in the railroad situation was favorable. At 3,043,540 tons for the 30 days the daily average was 101,451 tons, a gain of about 5000 tons a day upon the May output, which was 2,985,682 tons for 31 days. May in turn showed a gain of 5000 tons a day over April. But the industry is still nearly 7500 tons a day below the peak reached in March, when the daily average was 108,900 tons.

Twenty-four blast furnaces went in in June and 17 were blown out or banked indefinitely, the 302 furnaces in blast on July 1 thus representing a net gain of 7. The estimated capacity active at the opening of the month was 101,500 tons a day, against 98,350 tons a day for 295 furnaces on June 1.

The latest word from steel-producing centers, however, indicates a more unfavorable turn, within the week. The Commerce Commission order that open-top cars be sent to coal mines and the renewal of the order directing box cars into grain-producing sections have left steel mills so short of cars that there is increased talk of a suspension of operations for ten days or two weeks to permit of a clearing up of the desperate congestion.

It is estimated that stocks of finished material awaiting shipment in the Pittsburgh, Youngstown and Shenango districts now aggregate about 1,000,000 tons.

As was predicted, the sheet and tin plate wage scale conference resulted in an agreement largely in line with the manufacturers' position. The elimination of the provision which would have closed down all the mills in 30 days following a failure to accept scales presented by lodges that might be formed among men now non-union came after long discussion. The workers secured an advance of 9 $\frac{3}{4}$  per cent for tin mill men and a further concession of an extra man in each mill crew.

Continued high prices for coke are producing a firm pig iron market, but the situation is largely a result of the freight dislocation, so that the relation of production and consumption cannot be judged by usual standards. The market for early-delivery billets and sheet bars is likewise dominated in part by the shortage of low-side or gondola type cars.

Additional sales of basic in eastern Pennsylvania bring the total in that district within 10 days to 35,000 to 40,000 tons. A large part was sold at \$42, furnace, in marked contrast with the continued strength of basic in the Pittsburgh district, where the quotation of \$45, Valley, is adhered to. In the Cleveland and Cincinnati markets, considerable activity has developed in foundry grades. In the latter city, an inquiry for 13,000 tons of foundry from one melter is pending and at Cleveland inquiries for 7000 to 8000 tons for first half of next year have

appeared. In the Chicago district the market is not very active, but some inquiries of fair size have developed.

While common reports from the automobile industry have been unfavorable, two companies made records in June, one turning out 3500 cars a day and another 625 cars.

Three fresh tank steamship contracts taken in the East will require 7500 tons of plates.

Cars bought by industrial companies have amounted to 6500 since May 1 and active inquiries will bring the total to 10,000. The National Tube Co. wants 300 and the Mather Collieries 400, while M. A. Hanna & Co. are inquiring for 500 more. The Universal Portland Cement Co. has ordered 300 cars. Orders for 1000 cars for the Illinois Central and 500 for the Chicago & North Western have also been placed and the St. Paul wants 3000.

Lake Superior iron ore shipments for June were 9,233,566 gross tons, as compared with 7,980,839 tons in June, 1919, an increase of 1,252,727 tons. To July 1 the movement was 16,440,505 tons, a gain of 432,086 tons over the total to July 1, 1919, but a falling off of 2,509,456 tons from that of 1918 for the same period. Early in the season 60,000,000 tons was the estimate for 1920, but it is now seen that some furnaces will need less ore than was counted on, since output has been cut down by lack of coke.

Competition of Continental material is increasing in the British steel market and American semi-finished steel has been offered at £23, as against £25 for the domestic product. Belgian and Luxemburg works are seeking business more actively and Belgian bars have sold at £27 in England.

Cancellations of some vessel contracts are a factor in the British situation, but their effect on the steel market may not be immediate, as certain yards were oversold. Nevertheless, this with other developments in the international steel market raises further questioning as to the trend of prices.

The report that more than 90,000 tons of cast iron pipe is wanted for China has had no serious attention. Producers who sell for export have well learned that high-sounding tonnages often have little significance.

## Pittsburgh

PITTSBURGH, July 6.

Shortage of cars has become so acute since a week ago, as a result of the Interstate Commerce Commission order No. 7 with regard to coal cars and a renewal of the order directing box cars into the grain-producing section that increased talk of a complete suspension for a period of 10 days or two weeks to permit a definite clearing up of the freight and steel plant congestion, is heard.

While the railroads serving this section are operating fairly well, no improvement can be chronicled in yard or road conditions, as the crews, to a considerable extent, are still made up of inexperienced men.

Conditions at the Conway yards of the Pennsylvania Railroad, the great clearing point on Western shipments, still are far from normal. The Baltimore & Ohio Railroad is having a little trouble on shipments east of Cumberland, Md., but in other directions it is making a pretty fair showing in the movement of cars.

The Pittsburgh & Lake Erie Railroad still is pretty

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

### For Early Delivery

| Pig Iron, Per Gross Tons: | July 6. | June 29. | June 8. | July 8. |
|---------------------------|---------|----------|---------|---------|
|                           | 1920    | 1920     | 1920    | 1919    |
| No. 2 X, Philadelphia‡    | \$47.15 | \$47.15  | \$47.15 | \$28.60 |
| No. 2, Valley furnace†    | 45.00   | 45.00    | 45.00   | 26.75   |
| No. 2 Southern, Cin'ti†   | 45.60   | 45.60    | 45.60   | 28.35   |
| No. 2, Birmingham, Ala.†  | 42.00   | 42.00    | 42.00   | 24.75   |
| No. 2, furnace, Chicago*  | 45.00   | 45.00    | 43.00   | 26.75   |
| Basic, del'd, eastern Pa. | 44.80   | 44.80    | 44.80   | 26.00   |
| Basic, Valley furnace     | 45.00   | 45.00    | 43.50   | 25.75   |
| Bessemer, Pittsburgh      | 46.40   | 46.40    | 44.40   | 29.35   |
| Malleable, Chicago*       | 43.50   | 43.50    | 43.50   | 27.25   |
| Malleable Valley          | 45.00   | 45.00    | 44.00   | 27.25   |
| Gray forge, Pittsburgh    | 44.40   | 44.40    | 43.40   | 27.15   |
| L. S. charcoal, Chicago   | 57.50   | 57.50    | 57.50   | 31.75   |

### Rails, Billets, etc., Per Gross Ton:

|                              | July 6.      | June 29. | June 8. | July 8. |
|------------------------------|--------------|----------|---------|---------|
| Bess. rails, heavy, at mill  | \$55.00      | \$55.00  | \$55.00 | \$45.00 |
| Bess. billets, Pittsburgh    | 60.00        | 60.00    | 60.00   | 38.50   |
| O-h. rails, heavy at mill    | 57.00        | 57.00    | 57.00   | 47.00   |
| O-h. billets, Pittsburgh     | 65.00        | 65.00    | 60.00   | 38.50   |
| O-h. sheet bars, P'gh.       | 75.00        | 75.00    | 80.00   | 42.00   |
| Forging billets, base, P'gh. | 85.00        | 85.00    | 85.00   | 51.00   |
| O-h. billets, Phila.         | <b>69.10</b> | 64.00    | 64.10   | 42.50   |
| Wire rods, Pittsburgh        | 75.00        | 75.00    | 75.00   | 52.00   |

### Finished Iron and Steel.

| Per Lb. to Large Buyers:    | Cents       | Cents | Cents | Cents |
|-----------------------------|-------------|-------|-------|-------|
| Iron bars, Philadelphia     | 4.75        | 4.75  | 4.25  | 2.595 |
| Iron bars, Pittsburgh       | <b>4.50</b> | 4.25  | 4.25  | 2.75  |
| Iron bars, Chicago          | 3.75        | 3.75  | 3.75  | 2.50  |
| Steel bars, Pittsburgh      | 3.50        | 3.50  | 3.50  | 2.35  |
| Steel bars, New York        | 4.02        | 4.02  | 4.02  | 2.62  |
| Tank plates, Pittsburgh     | 3.50        | 3.50  | 3.50  | 2.65  |
| Tank plates, New York       | 3.77        | 3.77  | 3.77  | 2.92  |
| Beams, etc., Pittsburgh     | 3.10        | 3.10  | 3.10  | 2.45  |
| Beams, etc., New York       | 3.27        | 3.27  | 3.27  | 2.72  |
| Skelp, grooved steel, P'gh. | 2.75        | 2.75  | 2.75  | 2.45  |
| Skelp, sheared steel, P'gh. | 3.00        | 3.00  | 3.00  | 2.65  |
| Steel hoops, Pittsburgh     | 5.50        | 5.50  | 5.00  | 3.05  |

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

much crippled, although the official report of this road to-day was that it had cleared up all westbound freight over the holiday and expected a good movement east to-day. The Pennsylvania Railroad reported moving approximately 62,000 cars in the central region on Sunday and more than 55,000 cars on Monday, including a goodly percentage of old stored freight. This road had about 6700 cars of stored freight in the central region this morning. Much confusion still exists with regard to the Interstate Commerce Commission order directing open-top cars to the coal mines, and it is the understanding of the steel trade that flat-bottom cars with sides, 30 in. and less in height, can be utilized for shipments, but no official pronouncement to this end has been issued. So few low side or mill type gondolas have been available that the movement of semi-finished material has been seriously curtailed. The American Sheet & Tin Plate Co. has been especially hard hit in this direction, having been unable to secure steel for its Shenango Valley plants from the Ohio Works of the Carnegie Steel Co. at Youngstown, Ohio, less than 50 miles away.

Congestion of finished material at the steel plants grows apace. It is estimated that the stocks in the Pittsburgh and Valley districts now aggregate about 1,000,000 tons. Finished steel of all sorts is piling up much more rapidly than it is leaving the mills, and ultimately, it is believed, that the only corrective measure that can be applied will be a complete shutdown of producing and consuming capacity for a period long enough to allow the railroads to devote their entire energies to cleaning up accumulations.

The threatened suspension of operations of sheet and tin plate mills, working under an agreement of the Amalgamated Association of Iron, Steel and Tin Workers, has been avoided through a settlement effected at a conference at Columbus, Ohio, last week. The adjust-

| Sheets, Nails and Wire,       | July 6. | June 29. | June 8. | July 8. |
|-------------------------------|---------|----------|---------|---------|
| Per Lb. to Large Buyers:      | 1920    | 1920     | 1920    | 1919    |
| Sheets, black, No. 28, P'gh.  | 5.50    | 5.50     | 5.50    | 4.35    |
| Sheets, galv., No. 28, P'gh.  | 7.00    | 7.00     | 7.00    | 5.70    |
| Sheets, blue an'l'd, 9 & 10.  | 4.50    | 4.50     | 4.50    | 3.55    |
| Wire nails, Pittsburgh        | 4.00    | 4.00     | 4.00    | 3.25    |
| Plain wire, P'gh.             | 3.50    | 3.50     | 3.50    | 3.00    |
| Barbed wire, galv., P'gh.     | 4.45    | 4.45     | 4.45    | 4.10    |
| Tin plate, 100-lb. box, P'gh. | \$7.00  | \$7.00   | \$7.00  | \$7.00  |

### Old Material, Per Gross Ton:

| Old Material, Per Gross Ton: | July 6.      | June 29. | June 8. | July 8. |
|------------------------------|--------------|----------|---------|---------|
| Per Lb. to Large Buyers:     | 1920         | 1920     | 1920    | 1919    |
| Carwheels, Chicago           | \$35.50      | \$35.50  | \$35.50 | \$22.50 |
| Carwheels, Philadelphia      | 38.00        | 38.00    | 38.00   | 23.00   |
| Heavy steel scrap, P'gh.     | 25.50        | 25.50    | 25.00   | 19.00   |
| Heavy steel scrap, Phila.    | 22.50        | 22.50    | 22.50   | 19.00   |
| Heavy steel scrap, Ch'go.    | 23.50        | 23.50    | 22.00   | 18.00   |
| No. 1 cast, Pittsburgh       | 40.00        | 40.00    | 32.00   | 19.00   |
| No. 1 cast, Philadelphia     | 37.00        | 37.00    | 37.00   | 23.00   |
| No. 1 cast, Ch'go (net ton)  | 36.00        | 36.00    | 35.50   | 22.00   |
| No. 1 RR. wrot, Phila.       | 33.00        | 33.00    | 33.00   | 24.00   |
| No. 1 RR. wrot, Ch'go (net)  | <b>25.00</b> | 24.50    | 25.00   | 17.00   |

### Coke, Connellsville,

| Per Net Ton at Oven: | July 6. | June 29. | June 8. | July 8. |
|----------------------|---------|----------|---------|---------|
| Furnace coke, prompt | \$17.00 | \$17.00  | \$14.00 | \$4.25  |
| Furnace coke, future | 11.50   | 11.50    | 14.00   | 4.12    |
| Foundry coke, prompt | 17.00   | 17.00    | 15.00   | 5.00    |
| Foundry coke, future | 14.00   | 16.00    | 15.00   | 5.00    |

### Metals,

| Per Lb. to Large Buyers:   | Cents       | Cents | Cents | Cents    |
|----------------------------|-------------|-------|-------|----------|
| Lake copper, New York      | 19.00       | 19.00 | 19.00 | 20.00    |
| Electrolytic copper, N. Y. | 19.00       | 19.00 | 19.00 | 19.75    |
| Zinc, St. Louis            | <b>7.85</b> | 7.55  | 7.75  | 7.15     |
| Zinc, New York             | <b>8.20</b> | 7.90  | 8.10  | 7.50     |
| Lead, St. Louis            | 8.00        | 8.00  | 8.50  | 5.15     |
| Lead, New York             | 8.25        | 8.25  | 8.75  | 5.40     |
| Tin, New York              | 48.00       | 48.50 | 49.25 | 70.50    |
| Antimony (Asiatic), N. Y.  | 7.50        | 7.50  | 8.75  | 8.37 1/2 |

The above prices are for domestic delivery and do not necessarily apply to export business.

ment is favorable to the manufacturers, in some respects, although an increase of approximately 9% per cent was granted the tin mill workmen and a further concession of an extra man in each mill crew was granted by the employer. The Amalgamated Association abandoned its demand for a revision of the second paragraph of the memorandum of agreement which would have made it necessary for the manufacturers to receive and approve or reject local wage scales to be presented by newly organized lodges of the Amalgamated Association, within a period of one month, and refusal on the part of the sheet and tin plate manufacturers to accept scales presented new Amalgamated lodges would have been sufficient grounds for calling out the entire Amalgamated body in the mill or mills of the company declining to agree to the new scale or scales. The Amalgamated Association abandoned its demand for a 20 per cent increase in sheet mill wages scales and also made the big concession of no longer insisting that absence of any of the crew constituted a short crew. Several of the tin plate mills, owners of which had doubted that settlement could be effected, had planned to suspend over this week and were not able to alter their plans.

No further change is observed in pig iron prices, but the market shows underlying strength, due to the fact that the demand for prompt tonnages will greatly exceed the supply. Continued high prices for coke are a factor in the price ideas of iron producers while the inclination to sell is held in check by a much reduced movement of ore. In the steel market, plates and shapes are easy, but in all other directions prices are very firm and indications are that some of the independent makers soon will seek higher prices on the ground that current prices and extras do not permit a fair margin of profit.

**Pig Iron.**—The market presents the peculiar anomaly of being active as far as the inquiry is concerned, but extremely quiet in the matter of actual sales. Practically nothing has been done in the past week, but no justification exists for any modification of prices recently established on the leading grades for early delivery. Indeed some doubt exists that any prompt basic today could be obtained as low as \$45, the basis of the most recent round lot sales for prompt delivery, although some makers probably would consider that price for last half tonnages. It is reported that a sale involving a good sized tonnage, a portion which is for immediate delivery and the rest for shipment over the remainder of the year, is pending at \$45, but details are withheld till the consummation of the sale.

The Westinghouse Electric & Mfg. Co. has put out an inquiry for 1000 tons each of No. 1 and No. 2 foundry iron for shipment to its plant at East Springfield, Mass. The lowest price reported against the inquiry for No. 2 grade is \$45, but this figure was named by a broker interest which is believed to have the iron either on wheels or in furnace yards and calling for a lower freight to New England than if the iron was shipped from a Valley furnace. The Mesta Machine Co. is seeking 250 tons, of prompt foundry. Neither of these inquiries yet has been closed. The poor supply and the rather uncertain movement of fuel, limestone and ore, are reflected in somewhat irregular blast furnace operations. The Carnegie Steel Co. has 41 of its 59 stacks active and 11 of the 12 furnaces of the Jones & Laughlin Steel Co. are in blast, one being down for relining. Among merchant producers the stack of the Kittanning Iron & Steel Co., Kittanning, Pa., is banked owing to a scarcity of coke, while No. 3 furnace of Shenango Furnace Co. was banked over the Fourth of July. The Ella furnace, which was banked a week ago, still is on the idle list. Average prices of Bessemer and basic pig iron from Valley furnaces for the month of June, as compiled by W. P. Snyder & Co., Pittsburgh, show an average price for the former of \$43.494, and for the latter \$44.0075, as compared with \$42.603 and \$42.485, respectively in May.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.40 per gross ton:

|               |         |
|---------------|---------|
| Basic         | \$45.00 |
| Bessemer      | 45.00   |
| Gray forge    | 43.00   |
| No. 2 foundry | 45.00   |
| No. 3 foundry | 43.50   |
| Malleable     | 45.00   |

**Billets and Sheet Bars.**—Adjustment of the wage scale dispute between independent sheet and tin plate manufacturers and the Amalgamated Association of Iron, Steel and Tin Workers found no immediate reflection in the demand for sheet bars for the reason that several manufacturers who had planned to shut down over the Fourth of July or in expectation that an agreement on the wage scale would not be reached, have not altered their arrangement. While a sale of 4000 tons of sheet bars in equal tonnages of Bessemer and open hearth is noted to a Wheeling consumer at \$75, this measures the top of the market and less probably could be done. Difficulties surrounding deliveries appear to be holding in check the demand for rerolling billets and prices also are influenced to some extent by the fact that some makers are offering accumulated stocks in directions where shipments can be made. A range of \$60 to \$65 is a fair one on recent sales of open-hearth steel of base dimensions from independent mills, although the upward trend of pig iron prices may lead to asking more. Forging steel is not actively sought, as the forging companies are unable to make distant shipments and are not pressed with business from those they can serve. Sale of 500 tons of these billets is noted at \$82.50, mill, for delivery over the current quarter. We note a sale of 1000 tons of open-hearth billets from stock at \$65, Youngstown, and of a round tonnage for export at \$70, Pittsburgh. Makers of strip steel report having paid up to \$70 and not being able to obtain prompt supplies for much less.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$38 to \$65; 2 x 2-in. billets, \$42 to \$65; Bessemer sheet bars, \$42 to \$65; open-hearth sheet bars, \$42 to \$75, and forging billets, ordinary carbons, \$85 to \$90 base, all f.o.b. Youngstown or Pittsburgh mill.

**Ferroalloys.**—The market here is extremely dull, with hardly enough doing to fairly establish quotations. Domestic 76 to 80 per cent ferromanganese still is rated at \$225 to \$250, delivered, for prompt shipment, but no sales of any account are noted. Material for shipment over the remainder of the year is quoted at \$200, delivered, but here, also, there is an utter lack of activity. It is intimated that English producers now are open to third and fourth quarter inquiries, but their price ideas are indefinite in the lack of demand. No improvement can be reported in the market for 50 per cent ferrosilicon, which remains dull and largely in buyers' favor. Though the lowest public quotation on this material is \$80, furnace, freight allowed, it is believed that attractive tonnages could be placed for less. General asking price of average 20 per cent spiegel-eisen is \$75, furnace, but this is somewhat above the basis of actual sales in this district.

We quote 76 to 80 per cent domestic ferromanganese \$200 for last half and \$225 to \$250 for prompt delivery, with a reduction of \$1.50 to \$1.75 per unit for lower percentages. We quote 50 per cent ferrosilicon at \$80 to \$85 and 18 to 22 per cent spiegeleisen at \$70 to \$75, furnace. Prices on Bessemer ferrosilicon are: 9 per cent, \$60.50; 10 per cent, \$63.50; 11 per cent, \$66.80; 12 per cent, \$70.10. We quote 6 per cent silvery iron, \$53; 7 per cent, \$54.50; 8 per cent, \$56.50; 9 per cent, \$58.50, and 10 per cent, \$61. An advance of \$3.30 per gross ton is charged for each 1 per cent silicon for 11 per cent and over on Bessemer ferrosilicon, and an advance of \$2.50 per gross ton is charged for each 1 per cent silicon for 11 per cent and over on silvery iron. All the above prices are f.o.b. makers' furnace, Jackson or New Straitsville, Ohio, which has a uniform freight rate of \$2.90 per gross ton for delivery in the Pittsburgh district.

**Structural Material.**—Structural awards with shops are few in this district and sentiment with regard to early improvement remains rather pessimistic. Shops are having a fair measure of success in securing shipment of plain material, but the movement of fabricated steel is smaller than it has been, owing to the shortage of cars. The American Bridge Co. has the contract for six oil barges, involving 1200 tons for the transport service of the War Department and 2000 tons for several radio towers for the Radio Corporation of America for its Long Island station. The McClinton Marshall Co. reports 1000 tons for eight balloon hangars for the construction division of the War Department. The market on plain material plainly is weaker than it has been due to the declining demand of the past few weeks and only one of the independent companies is now quoting higher than 3.25c. on structural shapes with 3.50c. the outside figure on plates.

**Plates.**—The market here continues in buyers' favor and 3.50c. not only is the maximum base but also is somewhat extreme, although the leading independent is holding firmly to 3.50c. and reports having declined considerable business at lower figures. A large eastern independent is reported to be accepting attractive tonnages at 3.25c. base. The financial disturbance in Japan is held accountable for much of the weakness in plate prices because so much tonnage bought for shipment to that country has been turned back upon the domestic market. Independent makers generally are not sold very far ahead on plates and have felt the competition of these resale offerings.

We quote sheared plates of tank quality,  $\frac{1}{4}$ -in. and heavier, at 2.65c. to 3c. for very indefinite delivery, while prices on  $\frac{1}{4}$ -in. and heavier plates named by mills that will agree to ship out in three to four months is 3.50c.

**Tin Plate.**—Although tin plate manufacturers have materially reduced the accumulated stocks, they are in a more unfavorable position now than they have been at any other time this year, because of the renewal of the Interstate Commerce Commission order directing that approximately 28,000 box cars be sent into the grain producing sections of the country while the result of the coal car order of the commission has spelled greatly curtailed shipments of steel to the finishing mills. Prompt demands for tin plate are still numerous, as is evident from the fact that stock items which constitute the spot or prompt market recently have sold as high as \$10. The settlement of the wage dispute between independent manufacturers and the Amalgamated Association of Iron and Steel and Tin Workers has eased the anxiety of consumers who recently, because of the possibility of a suspension in union mills, have been

trying to get the non-union mills to take additional tonnage, or to anticipate shipments against existing contracts. Not much has been done in export tin plate lately because of the fact that a considerable tonnage billed for Japan has been thrown back on the market as a result of recent financial upheaval in that country.

We now quote tin plate to domestic consumers for remainder of the year delivery at \$7 to \$8.50 base box, stock items \$9 to \$10, and for export \$11 to \$12 per base box, all f.o.b. Pittsburgh.

**Wire Rods.**—No letup is noted in the demand and with offerings scant, prices remain entirely in sellers' favor. Sales are reported of Bessemer screw stock rods up to \$90, makers' mill, and \$75 now appears to be minimum on the base size of common soft rods from independent works, with some sales of this grade reported at \$80. The American Steel & Wire Co. holds to a base of \$52, but such business as it is taking at this figure is for indefinite delivery. Carbon rods are not quoted under \$80 by independent makers and range up to \$100, according to carbon.

**Steel Rails.**—Fairly good demand still is observed in light rails, with the leading independent makers quoting 3.50c. to 3.75c. for the base size. Sales of standard sections from stock are reported by one independent maker at prices ranging anywhere from \$62 to \$75, but only small tonnages are involved. Railroads tributary to Pittsburgh continue to make inquiries regarding their 1921 requirements, but no actual sales are reported. The Cambria Steel Co. is rolling sheet bars on its standard rail mills and practically out of the rail market at present.

The Carnegie Steel Co. is still quoting the March 21, 1919, prices, these being 2.45c. for 25 to 45-lb. sections, 2.49½c. for 16-lb. and 26-lb. sections, 2.54c. for 12-lb. and 14-lb. sections, and 2.58½c. for 8-lb. and 10-lb. sections. This company is also quoting standard sections 50 lb. and heavier at \$45 for Bessemer and \$47 for open hearth stock. The Cambria Steel Co. is quoting 25-lb. to 45-lb. sections at 3.75c., 16-lb. and 20-lb. sections, 3.79½c., 12-lb., 3.84c. at mill, for such delivery as it can make.

**Iron and Steel Pipes.**—While all makers manage to keep their mills in operation and some of them are running practically full, the position of consumers and distributors is desperate by reason of the fact that only one or two of the manufacturers are able to make shipments of any consequence on account of acute shortage of railroad cars. River shipments have enabled the National Tube Co. and the Jones & Laughlin Steel Co. to make a fair showing on Western consignments. Both of these companies plan on additions of their fleet as a result of the success gained in water deliveries.

**Chain.**—The United States Chain & Forging Co. and the American Chain Co. recently have met the advance made by other makers of steel chain and all companies now are quoting a base of 6.75c. for 1-in. proof coil.

**Hot-Rolled Strips.**—While the regular market may be regarded as 5.50c. base, this price refers only to bookings being made by one or two companies from regular customers, and no guarantee against transportation and other delays in delivery is provided. Buyers who insist on delivery by a specified time must expect to pay at least 6c. base, and some makers are quoting 7c. base.

**Wire Products.**—Sales of nails are reported up to \$4.50, base, and of plain wire up to \$4, base, by one independent manufacturer, and it is more than probable that at least one of the companies now quoting \$4, base, on nails and \$3.50 on plain wire, will make an early revision upward on the ground that these prices on present costs do not allow a fair margin of profit. As far as the movement of finished wire products is concerned, it is still entirely one of motor trucks, as supplies of railroad cars are sadly deficient. Demands for nails and wire still are heavy, but are getting almost no attention because of the backed-up orders, one company here reporting that it declined orders aggregating more than 6000 tons last week.

We quote wire nails at \$3.25 base, this being the price of the American Steel & Wire Co., and \$4.50 independent mills. We quote bright basic wire at \$3, the price of the American Steel & Wire Co., and \$3.50 to \$4 the price range of the independent mills.

**Iron and Steel Bars.**—It is believed that the price of iron bars which is expected to be named soon to cover the increased cost due to the recent wage advance of 15 per cent granted by mills operating under an agreement with the Amalgamated Associations will be 4.75c., base, for common iron. This price, however, has not yet been established by sales or made as a quotation by any of the makers in this district. The market continues to show a firm undertone on merchant steel bars, although the volume of early shipment business has declined considerably in the past few weeks, because of the difficulties surrounding shipments. Where a specific delivery is insisted upon, buyers are still unable to do much better than 4c., base, while independent makers are quoting from 3c. to 3.25c. on indefinite deliveries. Bar mill operations remain at a low ebb with most of the production being piled.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. to 3.50c. at mill, prices depending entirely on the buyer and the delivery wanted. The demand for concrete reinforcing steel bars is fairly active, and we quote these, when rolled from billets, at 4c. to 4.25c., and from old steel rails at about 3.50c. at mill. We quote common iron bars at 4.25c. to 4.50c. and refined iron bars at 4.50c. to 5c. in carloads, f.o.b. mill, Pittsburgh.

**Cold-Rolled Strip.**—Shortage of cars keeps shipments from the mills at a minimum and prevents any material relaxation in the demand, with the result that prices show much firmness. While some makers continue to take business from regular customers at 8.50c. per lb., mill, such business is booked subject to transportation delays, and buyers seeking specific delivery are obliged to pay premiums over this price of as much as \$30 per ton.

**Sheets.**—The industry appears to be closer to a complete suspension than at any other time since the outbreak of the outlaw railroad strike, a condition that is entirely ascribable to the shortage of cars. Few men are available for the movement of sheet bars to the finishing mills and fewer cars are still available for the movement of the finished product. The congestion of finished material was acute at practically all mills, but especially at the plants of the American Sheet & Tin Plate Co., which in the past week has had five or six of its plants without cars almost daily. This company has experienced great difficulty in securing sheet bars for its different plants, being unable to obtain railroad facilities for moving them from Youngstown to the Shenango Valley works, or from the Monongahela Valley plant of the Carnegie Steel Co. to its Pittsburgh district works. The greater portion of the production at both the independent companies and the American Sheet & Tin Plate Co. continues to be piled. Not much new business is being booked at present because of heavy stocks awaiting shipment.

We quote No. 28 gage box annealed one-pass black sheets at 4.35c. to 8c.; No. 28 galvanized, 5.70c. to 9c., and Nos. 3 and 10 blue annealed at 3.55c. to 7c., the lower prices named being the March 21, 1919, schedules, which are still named by the leading interests, while the higher prices represent a fair range of quotations by the independent mills.

**Hoops and Bands.**—Independent makers still are in receipt of large inquiries and if they were disposed to do so, might readily enter orders at 5.50c., base, or higher.

**Cotton Ties.**—The July price for ties of the Carnegie Steel Co. is \$2.01½ a bundle of 45 lb., the advance covering the monthly carrying charge of 1.50c. per bundle, and the Pittsburgh Steel Co. is taking some business from its regular customers at somewhat above the quotation of the Carnegie Steel Co.

**Cold-Finished Steel Bars.**—No change is observed in prices, with leading makers quoting 4.10c. to 4.25c., base, on orders from regular customers carrying indefinite delay. Other makers, however, are in position to fill orders for early delivery, and are quoting 6c., base, minimum, and a sale is noted of 200 tons of flat for July and August shipments, on a conver-

(Continued on page 107)

## Philadelphia

PHILADELPHIA, July 6.

The outlook for the iron and steel trade is somewhat brighter than a week ago. The favorable factors are these: Some of the railroad strikers have returned to work; the threatened strike of shopmen on the Pennsylvania Railroad has been "deferred indefinitely"; there will be modifications this week of freight embargoes, particularly by the Pennsylvania and Baltimore & Ohio roads, and the longshoremen at Philadelphia have voted to return to work, which will insure a better movement of export shipments. In addition to these developments, there has been a better inquiry for pig iron and steel products, and orders are more numerous, though tonnages as a rule are small. The most serious thing with which the industry has to contend is the order of the Interstate Commerce Commission that all open-top cars be returned to the coal mines. It is possible that there will be a modification of this order permitting the use for other materials of open-top cars which haven't the dumping arrangement. The scrap trade has been foremost in the effort to obtain this modification, and a committee of scrap dealers will meet with the commerce commission in Washington on Thursday to discuss this question. The car shortage has affected operations in some of the Eastern steep plants seriously. The Eastern Steel Co. shut down its steel and finishing departments Saturday for an indefinite period, possibly a week or longer, and the Lukens Steel Co. will be shut down until Thursday of this week to accumulate a supply of gas coal. Blast furnace operations are also curtailed by the scarcity of coke. The Warwick furnace is again in blast, but several other stacks in eastern Pennsylvania are banked.

The only conspicuous market activity of the past week was in basic pig iron. Additional lots have been sold, bringing the total sales of the past week or 10 days up to about 35,000 to 40,000 tons. Prices were somewhat lower than the minimum mentioned last week, as low as \$42, furnace, having been done on a good-sized share of the total tonnage. The lowest delivered price reported was \$43, which a steel maker paid for several thousand tons. Although this represents a reduction from the quotation which has appeared in THE IRON AGE, it does not reflect a weakness in the market, and without doubt producers could have obtained a higher price, had they insisted upon it.

The plate market seems to be slightly firmer at 3.50c., Pittsburgh, this price usually applying to tank steel, while 3.75c. is being quoted, and in many instances is gotten without difficulty on specification plates. Billets are firm and higher. An Eastern company which has been selling open-hearth rerolling billets at \$60 to \$65, Pittsburgh, will not now take anything below \$65. Another company has sold 2500 tons for shipment to the Detroit district at \$65 or higher. Sheet bars are available at \$70, Pittsburgh, a small tonnage having been sold last week at this price. Some weakness is noted in ferromanganese, 200 tons of which has sold for September-October shipment at \$190, delivered, the buyer being a Pittsburgh steel foundry. Spot ferromanganese is available at \$220 to \$225, delivered.

**Pig Iron.**—In addition to the sales of basic pig iron reported last week, other lots have been closed, bringing the total sold by Eastern furnaces in the past week or ten days to 35,000 to 40,000 tons, not including about 8000 tons of off iron. One furnace has sold 15,000 tons, another interest has taken about 10,000 tons, a third about 6000 tons, and a fourth about the same tonnage. Two makers of plates were the largest buyers, one in Delaware closing for 12,000 to 18,000 tons, another in Pennsylvania for about 10,000 tons; a wire rope manufacturer has taken about 8000 tons, a pipe-bending company a few thousand tons, and a consumer at Bridgeport, Conn., 3000 tons. The prices at which some of this iron was sold are lower than reported last week. Two of the buyers succeeded in getting a price of \$42, furnace, on a considerable portion of their purchases, the delivered prices ranging from \$43 to \$44.80. In another transaction, the seller

at first quoted \$44, furnace, but revised his price downward \$1 on insistence of the buyer. Unless other furnaces come into blast, the output of basic iron for the remainder of the year is pretty well sold up, and makers predict that on another purchase the market would be at least \$44, furnace. In the past week there has been a decidedly better inquiry for foundry iron, one maker of machinery in New York inviting bids on 3000 tons for last half, and small inquiries are fairly numerous. A small lot of Virginia iron has been sold for delivery in first quarter of 1921. Prices are unchanged, the minimum quoted by any furnace in this district being \$45, furnace, for 1.75 to 2.25 per cent silicon, with \$47 as the top. There are more transactions at \$46 and \$47, base, than at the lower figure.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

|   |                    |
|---|--------------------|
| East. Pa. No. 2 plain, 1.75 to 2.25 sil.    | \$45.90 to \$48.10 |
| East. Pa. No. 2 X, 2.25 to 2.75 sil.        | 47.15 to 49.35     |
| Virginia No. 2 plain, 1.75 to 2.25 sil.     | 48.10 to 49.10     |
| Virginia No. 2 X, 2.25 to 2.75 sil.         | 49.35 to 50.35     |
| Basic deliv. eastern Pa.                    | 43.00 to 44.80     |
| Gray forge                                  | 43.00 to 44.00     |
| Standard low phosph. (f.o.b. furnace)       | 54.00              |
| Malleable                                   | 48.10 to 48.60     |
| Copper bearing low phosph. (f.o.b. furnace) | 50.00              |

**Ferroalloys.**—A sale of 200 tons of 76 to 80 per cent ferromanganese has been made to a steel foundry in Pittsburgh at \$190, delivered, a concession of \$10 a ton from the price quoted by two of the leading producers. Spot ferromanganese is also slightly weaker, a sale of a carload having been made at \$220, delivered, while \$225 is the top. There is little activity in spiegeleisen, which is quoted at \$75, furnace.

**Semi-Finished Steel.**—The market for billets is somewhat firmer. An Eastern company which has been making sales of open-hearth rerolling billets at \$60 to \$65, Pittsburgh, now quotes nothing less than \$65 for this grade and \$75 to \$80, Pittsburgh, on forging quality. Another company has sold 2500 tons of rerolling billets to a Detroit consumer at not less than \$65, Pittsburgh. Sheet bars, however, continue easier, and another sale has been made by an Eastern company at \$70, Pittsburgh.

**Plates.**—Inquiries for plates have increased in number, and while in general they are not for large tonnages, the aggregate is somewhat larger than has been the case in many weeks. Orders, too, are in better volume and sellers believe that the market has slightly stiffened. Tank steel is still obtainable at 3.50c., Pittsburgh, but more difficulty will be encountered by buyers in placing orders for specification plates with independent mills at below 3.75c., Pittsburgh. Not only the better inquiry, but operating difficulties are responsible for the firmer tone. Some of the Eastern plate mills are piling a part of their output because of inability to ship. The Lukens Steel Co. has shut down its mills until Thursday on account of shortage of gas coal; its loading bank is filled with material which it cannot ship and unless there is some relief in this direction, a longer shutdown appears inevitable. A shipyard is in the market for about 2500 tons of ship plates. Buying for car repairs is in fair volume.

**Structural Material.**—Despite the absence of marked building activity, there is a slightly better demand for shapes, and prices hold fairly firm at 3.25c. to 3.50c., Pittsburgh. The mills and the steel making department of the Eastern Steel Co. are shut down, possibly for a week or longer, owing to shortage of coal. The company's blast furnace, which was banked, is again in blast.

**Bars.**—The demand for soft steel bars continues in good volume. One company has sold in the past week about 3000 tons in small lots, all at 4c., Pittsburgh, and has also taken 1000 tons of band steel at 5.50c., Pittsburgh. Most of the bar iron makers are now getting orders at the advance of \$10 a ton announced a few weeks ago. They now quote common bar iron at 4.50c., Pittsburgh; 3/8 and 7/16-in. rounds and squares, 5.20c., 1/4 and 5/16-in. rounds and squares, 6c.; ats wider than 6 in., 4.80c., and bands, 5.50c. Labor troubles at one

or two of the Eastern plants which employ puddlers have again appeared and output is restricted.

**Old Material.**—Additional sales of heavy melting steel scrap for shipment to England have been made in the past week. Although prices on these export sales are at \$25, seaboard, and higher, the domestic market has been little affected for the reason that the grade of steel demanded for export shipment is better than that ordinarily sold to the domestic trade as No. 1 heavy melting steel. As an example of the situation, an Eastern steel company last week closed for about 10,000 tons of steel scrap at about \$22.50, delivered. Otherwise the scrap market is quiet, but dealers are buying fair-sized lots for shipment to the Pittsburgh district, where sales have been made at \$26.50, delivered. We quote for delivery to consumers in this district as follows:

|   |                    |
|---|--------------------|
| No. 1 heavy melting steel.....  | \$22.50 to \$23.00 |
| Steel rails rerolling.....  | 32.00 to 33.00     |
| No. 1 low phos., heavy 0.04 and under.....                            | 30.00 to 31.00     |
| Car wheels.....   | 38.00 to 40.00     |
| No. 1 railroad wrought.....   | 33.00 to 34.00     |
| No. 1 yard wrought.....   | 26.00 to 27.00     |
| No. 1 forge fire.....   | 17.50 to 18.00     |
| Bundled skeleton.....   | 17.50 to 18.00     |
| No. 1 busheling.....  | 20.00 to 21.00     |
| No. 2 busheling.....  | 17.00 to 18.00     |
| Turnings (short shoveling grade for blast furnace use).....           | 17.00 to 18.00     |
| Mixed borings and turnings (for blast furnace use).....               | 16.50 to 17.50     |
| Machine-shop turnings (for rolling mill and steel works use).....     | 18.50 to 19.00     |
| Heavy axle turnings (or equivalent).....                              | 20.00 to 20.50     |
| Cast borings (for rolling mills).....                                 | 20.00 to 21.00     |
| Cast borings (for chemical plants).....                               | 21.50 to 22.50     |
| No. 1 cast.....   | 37.00 to 39.00     |
| Railroad grate bars.....  | 30.00 to 31.00     |
| Stove plate (for steel plant use).....                                | 27.50 to 28.50     |
| Railroad malleable.....   | 28.00 to 29.00     |
| Wrought iron and soft steel pipes and tubes (new specifications)..... | 22.00 to 23.00     |
| Iron car axles.....   | 45.00 to 46.00     |
| Steel car axles.....  | 42.00 to 44.00     |

## Boston

BOSTON, July 6.

**Pig Iron.**—The spurt in buying, noted a week ago, did not hold, although the market is by no means dull. Deliveries have slowed up noticeably because of embargoes and the danger of enforced shutdowns is expressed in spots. Some foundries have been instructed to hold up production, especially on automobile work, but not to a degree where the consumption of pig iron is endangered. Among the sales reported this week is one of 2000 tons Alabama, silicon 1.75 to 2.25, at \$42 furnace, third quarter delivery, to a western Massachusetts melter. This iron will cost in the neighborhood of \$53 f.o.b. the foundry. Other Southern iron sales include 500 tons, silicon 4.25 to 4.75, to a Bridgeport, Conn., consumer, 100 tons, silicon 2.75 to 3.25, to a New Britain, Conn., consumer, and three or four 100, 200 and 300-ton lots, silicon 2.25 to 2.75, to Massachusetts consumers, third and fourth quarter deliveries, all on a \$42 furnace base. A little Virginia, silicon 2.75 to 3.25, third quarter, sold at \$45 furnace base, and Pennsylvania, 2.25 to 2.75, fourth quarter, at \$45 furnace, to Vermont, Massachusetts and Rhode Island consumers. One eastern Pennsylvania furnace formerly quoting third quarter iron at \$46 and fourth quarter at \$47, is now asking \$47 and \$48 respectively. Delivered prices follow:

|   |                    |
|---|--------------------|
| East. Penn., sil. 2.25 to 2.75.....         | \$49.15 to \$51.15 |
| East Penn., sil. 1.75 to 2.25.....          | 47.90 to 49.90     |
| Cent. & West. Penn., sil. 2.25 to 2.75..... | 49.95 to 50.95     |
| Cent. & West. Penn., sil. 1.75 to 2.25..... | 48.70 to 49.70     |
| Buffalo, sil. 2.25 to 2.75.....             | 49.15 to 50.15     |
| Buffalo, sil. 1.75 to 2.25.....             | 47.90 to 48.90     |
| Virginia, sil. 2.25 to 2.75.....            | 49.95 to 50.95     |
| Virginia, sil. 1.75 to 2.25.....            | 48.70 to 49.70     |
| *Alabama, sil. 2.25 to 2.75.....            | 49.45              |
| *Alabama, sil. 1.75 to 2.25.....            | 47.75              |

\*Alongside Boston prices.

**Coke.**—The Providence Gas Co., Providence, R. I., has been obliged to cut its production of coke 40 per cent owing to its inability to secure coal. The Interstate Commerce Commission's ruling on open cars has resulted in a pronounced shrinkage in the available supply of cars for the Everett plant of the New England Coal & Coke Co., and there is a possibility of some accumulation of coke at the ovens. That company is still quoting on a basis of \$19.90 a ton delivered where the freight does not exceed \$2.40.

**Finished Iron and Steel.**—Railroad embargoes have checked the movement of finished product from mills into New England since last reports. The Lackawanna Steel Co., however, has succeeded in getting material through via the Grand Trunk Railroad, but in limited quantities. The Bancroft & Martin Rolling Mills Co., Portland, Me., is rolling an average of 700 tons bars weekly, and in one recent week rolled 900 tons. McClintic-Marshall Co. is awarded 130 tons structural for the C. W. Jones Mills, New Bedford, Mass. Local heavy hardware jobbers have advanced cut nails to \$8 per cask base. Jobbers' prices on iron and steel are steady and unchanged.

Jobbers quote: Soft steel bars, \$5.50 to \$6.50 per 100 lb. base; flats, \$6.50 to \$6.85; concrete bars, \$6 to \$6.50; tire steel, \$7 to \$7.50; spring steel, open hearth, \$11; crucible, \$16; steel bands, \$8 to \$8.25; steel hoops, \$9; toe calk steel, \$8; cold-rolled steel, \$10 to \$10.50; structural, \$6 to \$6.50; plates, \$6.50; No. 10 blue annealed sheets, \$9; No. 28 black sheets, \$9.15; No. 28 galvanized, \$10.50; refined iron, \$5.50 to \$8; best refined, \$7 to \$7.50; Wayne, \$8.50; band iron, \$8; hoop iron, \$9; Norway iron, \$20.

**Old Material.**—The past week has been a colorless one in this market. There has been some buying of heavy melting steel for export and Pennsylvania mills as well as borings and turnings, and of No. 1 machinery for Massachusetts foundries, but it has been unimportant and at unchanged prices. Rejections by Pennsylvania mills are reported fewer, largely due to curtailment of shipments, however. Dealers' prices f.o.b. local yards follow:

|  |                    |
|--|--------------------|
| No. 1 heavy melting steel.....                         | \$18.00 to \$21.00 |
| No. 1 railroad wrought.....                            | 24.00 to 25.00     |
| No. 1 yard wrought.....                                | 22.00 to 23.00     |
| Wrought pipe (1 in. in diameter, over 2 ft. long)..... | 18.00 to 19.00     |
| Machine shop turnings.....                             | 13.50 to 14.50     |
| Cast iron borings.....                                 | 16.00 to 16.50     |
| Heavy axle turnings.....                               | 16.00 to 16.50     |
| Blast furnace borings and turnings.....                | 13.50 to 14.00     |
| Forged scrap.....                                      | 13.00 to 13.50     |
| Bundled skeleton.....                                  | 13.00 to 13.50     |
| Street car axles.....                                  | 31.00 to 32.00     |
| Car wheels.....  | 37.00 to 38.00     |
| Machinery cast.....                                    | 38.00 to 39.00     |
| No. 2 cast.....  | 34.00 to 35.00     |
| Stove plate.....                                       | 24.00 to 25.00     |
| Railroad malleable.....                                | 26.00 to 27.00     |
| Rerolling rails.....                                   | 27.00 to 28.00     |

## Buffalo

BUFFALO, July 6.

**Pig Iron.**—The market shows little signs of activity, the car situation having tied up shipments. Local foundries are using trucks to get their supplies out of furnace yards where possible. A local interest sold 2000 tons of foundry at \$45 and 2000 tons of malleable at \$46.25, mostly for fourth quarter delivery. A basic inquiry for 1000 tons and a basic inquiry for 5000 tons were before the market, but not accepted. Another furnace reports sale of 500 tons of foundry at prevailing prices. Complaint is made of the character of coke being received. The car shortage compels ovens to retain the material longer than is wise, with the result that it is in poor condition when it arrives. Considerable high sulphur iron is being produced.

We quote f.o.b. Buffalo:

|  |                  |
|--|------------------|
| No. 1 foundry, 2.75 to 3.25 sil.....   | \$48.00          |
| No. 2 X foundry, 2.25 to 2.75 sil..... | 46.25            |
| No. 2 plain, 1.75 to 2.25 sil.....     | 45.00            |
| Basic.....                             | \$44.00 to 45.00 |
| Malleable.....                         | 46.25            |
| Lake Superior charcoal.....            | 58.00 to 60.00   |

**Finished Iron and Steel.**—Mill interests complain that the car situation is in very bad shape, despite the ruling of the Interstate Commerce Commission, which was supposed to give certain relief to the steel interests. The modified order is supposed to allot steel and iron interests gondolas with sides 36 in. or under, but mill interests say that they have obtained very few of these. The original order resulted in many mills being deprived of 90 per cent of their former supply of cars, which has been, of course, hampered since the recent strike. The gravity of this situation is apparent. The car supply has resulted in at least one mill interest notifying its customers that all orders will be subject to ability to obtain cars, and if in the course of the rolling schedule steel is made for immediate shipment which is found impossible to ship, this may be piled. Inquiry is slack on account of the traffic conditions. Some mills, through traffic troubles and heavy demand, are out of the market on cold finished material, bars,

and, in fact, nearly everything but plates and structural material. A sales agency here reports it is accepting all tonnages where material can be moved by truck, thus preventing piling. It is understood that the mills (and furnaces also) of the Steel Co. of Canada, Hamilton, Ont., have been forced into a complete shutdown by lack of cars. The key to the steel situation now is supply of coal and coke; supply of ore and ability to ship material.

Jobbers quote the following prices for this territory: Steel bars, 4.61c.; iron bars, 5.26c.; structurals, 4.46c.; plates, 4.66c.; No. 10 blue annealed sheets, 6.51c.; No. 28 black sheets, 8.25c.; No. 28 galvanized sheets, 9.50c.; bands, 5.81c.; hoops, 6.06c.; cold rolled steel, 6.00c.

**Old Material.**—The market is active with considerable stimulation as the result of recent sales. The car situation is a little bit improved due to the ruling of the Interstate Commerce Commission modifying its original embargo, which restricted gondola cars entirely to the coal trade. The entire tonnage recently purchased by a Buffalo mill has been ascertained to be about 50,000 tons of heavy melting steel and hydraulic compressed. It was purchased in several lots with two principal portions. About 20,000 tons of heavy melting steel was purchased for \$26 and 5000 tons of hydraulic compressed at \$23.50. The other portion was 25,000 tons, including about 16,000 tons of heavy melting steel at \$25 and about 9000 tons of hydraulic compressed at \$25 also. It seems certain that heavy melting steel will reach new levels, as there is considerable material being held for the expected higher price. We quote dealers' asking price, per gross ton, f.o.b. Buffalo, as follows:

|                                     |                    |
|-------------------------------------|--------------------|
| Heavy melting steel, regular grades | \$25.00 to \$26.00 |
| Hydraulic compressed                | 23.00 to 23.50     |
| Low phos., 0.04 and under           | 31.50 to 32.50     |
| No. 1 railroad wrought              | 30.50 to 31.50     |
| No. 1 machinery cast                | 37.50 to 38.50     |
| Iron axles                          | 39.00              |
| Steel axles                         | 39.00              |
| Car wheels                          | 37.00 to 38.00     |
| Railroad malleable                  | 30.50 to 31.50     |
| Machine-shop turnings               | 15.00 to 16.00     |
| Heavy axle turnings                 | 19.50 to 20.50     |
| Clean cast borings                  | 16.50 to 17.50     |
| Iron rail                           | 29.50 to 30.50     |
| Locomotive grate bars               | 23.50 to 24.50     |
| Stove plate                         | 31.50 to 32.50     |
| Wrought pipe                        | 20.50 to 21.50     |
| No. 1 busheling                     | 19.50 to 20.50     |
| Bundled sheet stampings             | 16.50 to 17.50     |

## St. Louis

ST. LOUIS, July 6.

**Pig Iron.**—Most recent developments indicate that the market is marking time. The demand from all sides is light. Actual business is confined to small lots, and not many of them. Meltings are proceeding in large volume; that is, as large as the scarcity of coke will permit. Labor troubles locally and in the country at large are disturbing the psychology of the trade, both producers and consumers. This factor, coupled with the car and coke shortages, make the times uncertain and not in the least encouraging to large production or heavy purchasing. Singularly enough, users are not seeking to depress prices, the reason for which is that many of them have expensive iron under contract or actually in their yards, and they want to work off these supplies before seeing the market decline. Quotations on 1.75 to 2.25 per cent silicon iron range from \$42 to \$44 furnace, with one furnace in the Ironton district asking \$45. Apparently there is a goodly quantity of Southern iron to be had at the minor figure of the spread, and it is hinted that a buyer equipped to pay promptly would be accommodated at slightly under \$42. Steel makers seem to be well supplied and are making no inquiry. Deliveries have been somewhat hampered by the recent order prohibiting the loading of flat cars with anything other than coal.

**Coke.**—The St. Louis district proper and the region to the west continues in the throes of one of the most pronounced coke famines experienced. The dearth has been accompanied by a radical advance in prices, but even the extortionate quotations have not been able to pry out tonnages sufficient to meet the most urgent demands. Nominally \$18 is being quoted for Connellsville foundry coke, but proffers of that figure have been

refused because the ovens claim to have nothing to offer. Selling agencies here are receiving "s. o. s. calls" from all over the western territory. Users and their representatives have made long journeys here in hopes of getting a few cars, but without success. It is estimated that general order No. 7 regulating flat top equipment, has cut delivery efficiency 50 per cent. The outlook for improvement is far from rosy.

**Finished Iron and Steel.**—The demand for virtually everything in this category continues brisk, and distributors, as well as manufacturers are far behind on orders and unable to accept much new business offered which involves specific delivery periods. Warehouse stocks have in some instances expanded, due to improved transport from Eastern mills, but the late regulation relative to flat cars is likely to set things back in this detail. Sheets of all grades and dimensions are extremely popular, and bars are being taken in quantity. Prices hold steady, no changes being reported in standard articles as contrasted with the preceding week.

For stock out of warehouse we quote as follows: Soft steel bars, 3.94c.; iron bars, 4.50c.; structural material, 4.04c.; tank plates, 4.24c.; No. 10 blue annealed sheets, 7.09c.; No. 28 black sheets, cold rolled, one pass, 8.10c.; No. 28 galvanized sheets, black sheet gage, 9.60c.

**Old Material.**—With mills and foundries temporarily out of the market, and dealers doing virtually nothing among themselves, the market for scrap iron and steel has an aspect of summer quietness. Several of the leading plants have embargoed against receiving scrap because of large accumulations and no fuel. The protest of local dealers against the order forbidding loading of open top equipment with anything but coal was productive of some modifications, which will help the out-bound movement of scrap. The only railroad offering before the market during the week was a list of 2,750 tons by the Pennsylvania Lines West. Several other roads have accumulations to dispose of, notably the Mobile & Ohio with 3,500 tons, but are unable to market them because of congestion on their lines and lack of equipment.

We quote dealers' prices f.o.b. customers' works, St. Louis industrial district, as follows:

|  | Per Gross Ton      |
|--|--------------------|
| Old iron rails   | \$31.50 to \$32.00 |
| Old steel rails, rerolling                               | 30.50 to 31.00     |
| Old steel rails, less than 3 ft.                         | 23.00 to 23.50     |
| Relaying rails, standard sections, subject to inspection | 50.00 to 55.00     |
| Old car wheels   | 34.50 to 35.00     |
| No. 1 railroad heavy melting steel                       | 21.50 to 22.00     |
| Heavy shoveling steel                                    | 20.50 to 21.00     |
| Ordinary shoveling steel                                 | 20.00 to 20.50     |
| Frogs, switches and guards, cut apart                    | 24.00 to 24.50     |
| Ordinary bundled sheets                                  | 13.00 to 13.50     |
|  | Per Net Ton        |
| Heavy axle and tire turnings                             | 12.00 to 13.00     |
| Iron angle bars  | 27.00 to 27.50     |
| Steel angle bars   | 21.00 to 21.50     |
| Iron car axles   | 39.00 to 39.50     |
| Steel car axles  | 32.50 to 33.00     |
| Wrought arch bars and transoms                           | 31.00 to 31.50     |
| No. 1 railroad wrought                                   | 24.00 to 24.50     |
| No. 2 railroad wrought                                   | 21.50 to 22.00     |
| Railroad springs   | 21.50 to 22.00     |
| Steel couplers and knuckles                              | 21.00 to 21.50     |
| Locomotive tires, 42 in. and over, smooth inside         | 20.00 to 20.50     |
| No. 1 dealers' forge                                     | 20.00 to 20.50     |
| Cast iron borings  | 13.00 to 13.50     |
| No. 1 busheling  | 19.00 to 19.50     |
| No. 1 boiler, cut to sheets and rings                    | 15.00 to 15.50     |
| No. 1 railroad cast                                      | 34.00 to 34.50     |
| Stove plate and light cast                               | 26.50 to 27.00     |
| Railroad malleable                                       | 24.00 to 24.50     |
| Agricultural malleable                                   | 23.00 to 23.50     |
| Pipes and flues  | 16.50 to 17.00     |
| Heavy railroad sheet and tank                            | 15.00 to 15.50     |
| Railroad grate bars                                      | 26.00 to 26.50     |
| Machine-shop turnings                                    | 11.50 to 12.00     |
| Country mixed  | 17.00 to 17.50     |
| Uncut railroad mixed                                     | 17.50 to 18.00     |
| Horseshoes   | 24.50 to 25.00     |

## Birmingham

BIRMINGHAM, ALA., July 6.

**Pig Iron.**—In the last few days of June and the first few of July, the Birmingham iron market picked up briskness for the first time in about three weeks. One furnace interest sold a lot of 2,000 tons for fourth quarter delivery to a southern consumer. A large foundry maker booked 2,000 tons and two lots of 500 tons each for New England delivery by rail and water via Savannah. This maker also booked orders for 150 and 200 tons for Cincinnati territory, 200 and 500 tons

for Chicago territory and 500 tons for southern delivery. All this business was for immediate shipment. Other makers report a noticeable increase in the attitude of melters and a greater desire to take on more tonnage. Alabama furnaces pulled through the first two weeks of the coal car priority order without the serious inconveniences which they had expected. No furnace was banked and, while some were pressed for raw material, all managed to pull through. This would indicate that the coal car order will have come and gone without curtailing the Alabama iron production, which is now the largest in more than two years. The Alabama Co. bought 16 flat and dump cars, but found them not absolutely necessary. Moving product to market continues to be the real problem of the makers. Probably 40,000 tons was piled on Alabama yards in June. The Alabama market has turned the half year with firm demand for furnace capacity and sales made with apparent uniformity on the \$42 f.o.b. base.

We quote per gross ton, f.o.b. Birmingham district furnaces, the Tennessee company excepted, as follows:

|                                 |         |
|---------------------------------|---------|
| Foundry, sil. 1.75 to 2.25..... | \$42.00 |
| Basic .....                     | 41.00   |
| Charcoal .....                  | 55.00   |

**Cast Iron Pipe.**—Partly due to coal car priority orders preventing assemblage of raw material, the four plants of the United States Cast Iron Pipe & Foundry Co. at Bessemer, Birmingham, Anniston and Chattanooga closed on June 26 and will remain closed until about July 7. The shutdown amounts to a 10-days' longer July Fourth holiday period than is customarily taken. Sanitary shops have not as yet realized the expected slack due to decrease in building operations and continue at near full capacity in spite of difficulty in assembling raw material. Flange pipe orders for oil well use are being booked for delivery 120 days after placing of orders. There is more of this business offered than plants can care for. Prices remain at \$73 for 4 in. and \$70 for 6 in. and upwards. Municipalities are apparently finding it more difficult to place bonds for purchase of water and gas pipe.

**Coal and Coke.**—Spot hand-picked foundry coke is selling at a low mark of \$12.50 with as high as \$14 and over gotten by some makers. Furnace coke ranges around \$10 and \$11. Coal production averages 65,000 tons weekly more than at this time last year and is increasing owing to the coal car priority order. Strikes at the small mines producing domestic coal affect about 2,000 men and seriously curtail the supply. Domestic coal ranges at retail in Birmingham from \$7.50 to \$9.50.

**Old Material.**—The scrap market is weak in price tone and is seriously affected in heavy steel movements by the coal car order. Cast is moved almost as soon as received by yards, but the business is largely on old contracts. There is not a spirited feature in the entire list.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

|                             |                    |
|-----------------------------|--------------------|
| Steel rails .....           | \$21.00 to \$22.00 |
| No. 1 steel .....           | 19.00 to 20.00     |
| Cast iron borings .....     | 14.00 to 15.00     |
| Machine-shop turnings ..... | 14.00 to 15.00     |
| No. 1 cast .....            | 30.00 to 32.00     |
| Car wheels .....            | 28.00 to 30.00     |
| Tramcar wheels .....        | 27.00 to 29.00     |
| Steel axles .....           | 29.00 to 30.00     |
| No. 1 wrought .....         | 20.00 to 22.00     |
| Stove plate .....           | 24.00 to 26.00     |

Civil service examinations for engineers are announced as follows: For civil, electrical, mechanical, signal, structural and telephone work for the Interstate Commerce Commission, class A, \$3,900 to \$4,800 a year, and class B, \$2,200 to \$3,600 a year, Oct. 1; application should be made for form 1312 on the Civil Service Commission, Washington, or on corresponding offices at Federal buildings in leading cities. For mechanical engineer at engineer experiment station, Naval Academy, Annapolis, Md., \$7.28 per diem, form 2118. For assistant examiners, Patent Office, \$1,500 per annum, form 1312. For junior civil engineer, bureau of public roads, \$1,500, form 1312.

The annual outing of the employees of the offices and works of the plants of the National Tube Co., in the Pittsburgh district, will be held at Kennywood Park, near Braddock, Pa., on Aug. 21.

## New York

NEW YORK, July 6.

**Pig Iron.**—The New England company reported in the market last week for 7000 tons of basic has purchased at least 3000 tons at \$43, furnace, delivery to be in the last quarter. One firm has sold about 6000 tons of various grades of pig iron, and others report moderate business. Among inquiries pending are several for foundry iron for Western shipment aggregating about 4000 tons. The ease with which the iron being offered for resale by the Ford Motor Car Co., Detroit, is being absorbed is an indication of the strength of the market. In some cases the Ford company has absorbed the freight charge when the iron had been delivered at Detroit or was en route when sold. In other cases, the price was made f.o.b. furnace, and quotations have been for the most part in line with or very near to the full market price. The export situation is very unsatisfactory at the present time, owing to the difficulty of obtaining iron in the North and many troubles experienced in shipping. Much complaint is heard in regard to the policies of the United States Shipping Board in the movement of freight to foreign ports. The coke situation is very serious, increasing costs for foundries and furnaces. Foundry coke sales as high as \$18.50 to \$19, ovens, are reported.

We quote for delivery in New York as follows:

|   |                    |
|---|--------------------|
| East. Pa., No. 1 fdy., sil. 2.75 to 3.25  | \$50.05 to \$51.05 |
| East. Pa., No. 2 X fdy., sil 2.25 to 2.75 | 49.05 to 50.05     |
| East. Pa., No. 2 fdy., sil. 1.75 to 2.25  | 47.80 to 48.80     |
| Buffalo, sil. 1.75 to 2.25.....           | 47.90 to 48.90     |
| No. 2 X Virginia, sil. 2.25 to 2.75.....  | 49.60              |

**Finished Iron and Steel.**—Buying is in fair volume. Some companies are experiencing continued pressure while others report dullness. Plates and structural material are the more quiet lines, while in bolts and nuts mills are refusing fresh offerings. It is partly a response to the demand for bolts, nuts and like products that makers have generally advanced prices, effective July 1. These are generally the prices quoted on page 109. In matters of track bolts and track spikes, divergence is rather wide and 6c. to 6.50c., base, is commonly obtained for 200 keg lots, and 7c. on export business. Further car buying by private interests is noted and probably 3500 cars are to be bought by industrial companies following 6500 contracted for since May 1. The Donner Steel Co. has bought 200 cars of the Standard Steel Car Co. The National Tube Co. is inquiring for 300 70-ton hopper cars; the Mather Collieries Co. is about to settle on 400 cars; the Struthers Furnace Co. is to buy 20 more cars of 70 tons capacity; M. A. Hanna & Co., 500 more cars, and the Goodrich tire company is planning to buy 200 cars. The Elgin, Joliet & Eastern (a Steel Corporation road) is expected to buy 2500 cars. Contracts have been placed for the building of three tank steamships taking in all 7500 tons of plates. A loft building and an office building are among the contracts in the fabricated steel building field which have lately come to fruition, one for 1400 tons and the other 1800 tons. The Boston Elevated Railway work, 700 tons, will be fabricated by the Shoemaker, Satterthwait Bridge Co., and 100 tons for the Philadelphia & Reading will be furnished by the American Bridge Co. About 175 tons of bridge work has been let for the Southern Railway. The McHarg-Barton Co. has placed the fabricating contract for two piers at Stapleton, S. I., 2500 tons, with the Blaw-Knox Co., Pittsburgh. New work includes 4500 tons for the Straus Building, Fifth Avenue and Forty-fifth Street, 500 tons for the Central Railroad of New Jersey, and 100 tons for the Pennsylvania Railroad.

We quote for mill shipment, New York, as follows: Soft steel bars, 2.62c. to 4.52c.; shapes, 2.72c. to 4.27c.; plates: 2.92c. to 4.27c., the minimum prices being for indefinite delivery and the highest prices for delivery in a few weeks; bar iron, flats, wider than 6 in., 5.07c. to 5.27c. with half extras; light rounds, squares and flats, 5.77c. to 6.27c. with full extras; and other sizes, 4.77c. with half extras.

**Ferroalloys.**—The market for ferromanganese continues very quiet and demand is of small proportions. There are almost no inquiries, but prices are firm at

\$200 for domestic alloy for the last half and \$225, delivered, for prompt shipment. Imports in May were the largest in at least the last 18 months, having been 3981 tons. Imports in the 11 months ended with May have been over 3000 tons per month, or about 1000 tons per month heavier than in the same 11 months a year ago, the total to June 1, 1920, having been 33,279 tons. The spiegeleisen market is strong at \$75, furnace, and the inquiries noted a week ago have not yet been closed. There are no developments in the manganese ore market except the fact that imports in May were the heaviest this year at 56,586 tons. The May imports bring the total for the 11 months to June 1, 1920, to 243,572 tons, which, however, is 200,000 tons less than the same 11 months in 1919. The ferrosilicon market, 50 per cent, is unchanged at \$80 to \$85 per ton, delivered, with demand quiet. Quotations for lump ferrotungsten guaranteed are 90c. per lb. of contained tungsten; for the same, not guaranteed, the quotation is 70c. The alloy in powder is 78c. to 85c. per lb. of contained tungsten. Tungsten powder, 96 to 98 per cent, is quoted at 95c. to \$1.05 per lb. All these prices are f.o.b. makers' works. Ferrovanadium is quoted at \$6.50 to \$7 per lb. of contained vanadium in wholesale lots for early delivery, but these are nominal, the alloy being exceedingly scarce. Small lots for prompt delivery are selling above \$7. Ferrocobaltitanium, 15 to 18 per cent, is selling at \$200 per net ton in carload lots, at \$220 per ton in lots between one ton and a carload, and at \$250 per ton in lots less than a ton, f.o.b. Suspension Bridge, N. Y.

**High Speed Steel.**—The market continues quiet with buying light except from regular customers. Prices of 18 per cent tungsten, domestic high speed steel are from \$1.25 to \$1.30 per lb. New York.

**Cast-Iron Pipe.**—The most prominent municipal letting is that of the Department of Water Supply, Gas and Electricity of New York, bids for which will be in July 9, the tonnage being 2500 of sizes ranging from 4 in. to 20 in. Manufacturers still have all the business they care to handle. We quote 6-in. and heavier at \$76.30, New York; 4-in. \$79.30, with \$2 additional for Class A and gas pipe.

**Old Material.**—Very little price change is noted compared with a week ago. Some believe that the pre-war period of stagnation in the scrap market, which coincide with July and August of each year, will prevail again this year, especially since railroad transportation conditions are so bad. Should the shipping situation better itself, more of the demand for heavy melting steel for export could be taken care of, which might cause the raising of the market price in this commodity. Such price-raising took place during the war. Considerable steel is being sold by New York brokers to Pittsburgh brokers, the former receiving \$26. For steel sold to eastern Pennsylvania, however, a lower price prevails. We quote the lower prices.

Buying prices per gross ton, New York, follow:

|   |                    |
|---|--------------------|
| Heavy melting steel.....  | \$19.50 to \$20.00 |
| Rerolling rails.....  | 31.00 to 32.00     |
| Relaying rails, nominal.....                                      | 52.00 to 54.00     |
| Steel car axles.....  | 39.00 to 40.00     |
| Iron car axles.....   | 42.00 to 43.00     |
| No. 1 railroad wrought.....                                       | 29.00 to 30.00     |
| Wrought iron track.....   | 22.00 to 22.50     |
| Forge fire.....   | 13.50 to 14.00     |
| No. 1 yard wrought, long.....                                     | 23.50 to 24.00     |
| Light iron.....   | 9.00 to 10.00      |
| Cast borings (clean).....   | 16.50 to 17.00     |
| Machine-shop turnings.....  | 14.50 to 15.00     |
| Mixed borings and turnings.....                                   | 14.00 to 14.50     |
| Iron and steel pipe (1 in. min. diam., not under 2 ft. long)..... | 18.00 to 18.50     |
| Stove plate.....  | 25.00 to 26.00     |
| Locomotive grate bars.....  | 26.00 to 27.00     |
| Malleable cast (railroad).....                                    | 28.00 to 29.00     |
| Old car wheels.....   | 36.00 to 37.00     |

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

|  |                    |
|--|--------------------|
| No. 1 machinery cast.....  | \$38.00 to \$39.00 |
| No. 1 heavy cast (columns, building materials, etc., cupola size)..... | 37.00 to 38.00     |
| No. 1 heavy cast, not cupola size.....                                 | 31.00 to 32.00     |
| No. 2 cast (radiators, cast boilers, etc.).....                        | 31.00 to 32.00     |

The Oster Mfg. Co., Cleveland, is having plans prepared for a three-story factory building 75x130 ft.

## Cincinnati

CINCINNATI, July 6.

**Pig Iron.**—The market is more active than for many weeks, and some good sized inquiries are being figured on. The largest is for 13,000 tons of foundry iron from a local melter for shipment over the remainder of the year. Several inquiries for last half tonnages, ranging from 300 to 1500 tons, are also before the market, while the demand for spot iron is fair. A Chicago melter is inquiring for 3000 tons, including low phosphorus and malleable. A northern Ohio steel maker is inquiring for 3000 tons of basic and an Alabama melter is in the market for 4500 tons of foundry. Sales during the week included 1500 tons to a Central Ohio implement manufacturer, 750 to a local melter, 500 tons of Southern foundry to a central Ohio interest, and two lots of 350 and 300 locally. With the exception of the 1500-ton lot, which consisted mostly of Ford resale iron, all this business was placed at the regular schedules. A local agency reports the sale of 2000 tons of basic to a northern Ohio steel plant at \$45 Valley furnace. Prices are firm and several southern furnaces have advanced to \$44, Birmingham, for the base grade. The market, however, remains at \$42 for silicon 1.75 to 2.25 with the usual differentials for silicon content. No action locally has been taken on the 10,000 ton inquiry for malleable for central Ohio. The blast furnace of the Whitaker-Glesner Co. at Portsmouth went out for repairs on July 1 and will be down about six weeks. It is understood the company will secure the basic iron which it recently inquired for from one of the other companies included in the merger recently completed.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote f.o.b. Cincinnati:

|   |                  |
|---|------------------|
| Southern coke, sil. 1.75 to 2.25 (base price) ..... | \$45.60          |
| Southern coke, sil. 2.25 to 2.75 (No. 2 soft) ..... | 46.85            |
| Ohio silvery, 8 per cent sil. .....                 | 59.80            |
| Southern Ohio coke, sil. 1.75 to 2.25 (No. 2) ..... | 46.80            |
| Basis Northern .....                                | 44.80            |
| Malleable .....                                     | \$45.80 to 46.80 |

**Coke.**—Inquiry for spot coke is heavy, and prices range all the way from \$15 to \$18.50 at ovens. A sale of a few cars of Connellsburg foundry coke was made at \$15, to a foundryman in this district, and another sale involved about 12 cars at \$17.50. The \$18.50 price was received on two cars which were urgently needed to prevent a shutdown of a foundry. A number of inquiries for contract coke for last half shipment have been received, but sellers report that extreme difficulty is being experienced in placing these orders. The spot market may be quoted at from \$17 to \$18 for both furnace and foundry coke, and contract coke around \$14.50.

**Finished Iron and Steel.**—With an agreement having been reached by the sheet mill operators with the members of the Amalgamated Association, it is expected that sheet mills in this territory will resume operations as soon as repairs are completed. The Newport Rolling Mill Co. is expected to resume in about 10 days. A local consumer is inquiring for 800 tons of galvanized sheets, and this will likely go to a mill in southern Ohio, providing delivery is satisfactory. With the exception of sheets, no large inquiries are being received for other finished products, and the market is reported as quieter than for some time. A local broker, with some desirable sizes of Bessemer screw stock, reports that during the past week he offered a considerable tonnage of this to the trade, but up to date has not even received an answer to his letters. This stock was offered at from 1c. to 2c. a lb. under prices prevailing two weeks ago. Warehouses report business continuing brisk, and inquiries being received for finished products from other districts, principally Detroit. The reported slowing down in the automobile business appears to have little foundation, as reports received locally state that many factories in Detroit continue to operate at nearly normal capacity. Prices on all lines are unchanged, with the possible exception of iron bars.

which have been advanced slightly by some warehouses. It is expected in the trade that an advance in the price of black and galvanized sheets will be made to take care of the increased wages granted to sheet mill employees by the Columbus conference. No structural lettings are reported, and the only new inquiry is for about 150 tons for the buildings of the American Can Co., the general contract for which has been awarded to the Ferro-Concrete Construction Co.

Jobbers quote: Iron and steel bars, 5c. to 6c.; structural shapes, 4.50c.; plates, 4.50c.; steel bands, 6.50c.; No. 10 blue annealed, 7.50c.; No. 28 black sheets, 9c. to 10c.; No. 28 galvanized sheets, 10c. to 11c.

**Old Material.**—More activity has been evident in the scrap market during the week. The car shortage is the most serious handicap with which both dealers and consumers have to contend. Prices on bundled sheet scrap have shown a softer tendency, and have been marked down \$1 by most dealers. Some inquiry has been received from consumers in Cleveland and Valley districts, but no heavy buying has been done.

*Per Gross Tons*

|                              |                    |
|------------------------------|--------------------|
| Bundled sheets               | \$15.00 to \$16.00 |
| Old iron rails               | 27.00 to 28.00     |
| Relaying rails, 50 lb and up | 50.00 to 51.00     |
| Rerolling steel rails        | 31.00 to 32.00     |
| Heavy melting steel          | 21.50 to 22.50     |
| Steel rails for melting      | 24.00 to 25.00     |
| Car wheels                   | 19.00 to 30.00     |

*Per Net Ton*

|                                  |                    |
|----------------------------------|--------------------|
| No. 1 railroad wrought           | \$25.00 to \$26.00 |
| Cast borings                     | 11.50 to 12.00     |
| Steel turnings                   | 9.50 to 10.00      |
| Railroad cast                    | 31.00 to 32.00     |
| No. 1 machinery                  | 35.00 to 36.00     |
| Burnt scrap                      | 22.00 to 23.00     |
| Iron axles                       | 29.50 to 30.00     |
| Locomotive tires (smooth inside) | 23.50 to 24.50     |
| Pipes and flues                  | 16.00 to 16.50     |
| Malleable cast                   | 22.00 to 22.50     |
| Railroad tank and sheet          | 16.00 to 16.50     |

## Cleveland

CLEVELAND, July 6.

**Iron Ore.**—Ore shipments for June were 9,233,566 gross tons as compared with 6,976,085 tons during May and with 7,980,839 tons in June, 1919. The movement during the month amounted to more than had been expected in view of the delays caused by the holding up of cargoes at ports for several days waiting for cars. Shipments up to July 1 were 16,440,505 tons, which is a gain of 432,086 tons over the same period last year, the movement having been light during the early season of 1919. Shipments up to July 1 were 2,509,456 tons less than the same period for 1918, when the shipments were heavy and the movement for the season was 61,156,732 tons. Early in the season it was estimated that the season's ore requirements would reach 60,000,000 tons, but since then the requirements of many furnaces have been reduced because of banking or reduced production owing to the lack of fuel.

The ore movement during June was surprisingly large, considering delays caused at lower lake ports because of the scarcity of cars. As little coal is moving, most of the boats went up the lake light, so that they saved in not taking coal cargoes the time they lost in waiting to unload. The car supply for ore is slowly improving and July shipments should show a gain over June.

We quote, delivered lower Lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesaba Bessemer, \$7.20; Mesaba non-Bessemer, \$6.55.

**Pig Iron.**—Inquiries for 7000 to 8000 tons of foundry pig iron for the first half of next year have come from two consumers and one producer is understood to have quoted the present spot market price for that delivery. The demand for basic iron for early shipment is active, but the supply is very short and local producers and selling agencies have none to offer. Three northern Ohio steel makers are inquiring for 6000 tons of prompt shipment basic iron and a southern Ohio consumer has revived a recent inquiry for 6000 tons. The market is reported firm at \$45. The foundry iron market is not active, but some small lot sales are being made for the last half and there is a fair demand for prompt shipment foundry iron. The poor quality of fuel has resulted in the production of considerable off iron and because of scarcity of stand-

ard grades, producers are having no trouble in disposing of this iron at the regular differentials. One selling agency sold 3000 tons of off foundry iron during the week. Among new inquiries is one from the Westinghouse interests for 2000 tons of foundry iron for its Springfield, Mass., plant for the third quarter delivery. Producers are still seriously handicapped in shipping iron by the order that prevents the loading of open top cars except for shipment in the direction of the coal mines, and one Cleveland interest was compelled to pile fully 50 per cent of its iron in the week.

We quote delivered Cleveland as follows, based on 40c. switching charge for local iron, a \$1.40 freight rate from Valley points, and \$5 from Birmingham:

|   |                  |
|---|------------------|
| Basic                                   | \$45.40          |
| Northern, No. 2 fdy., sil. 1.75 to 2.25 | \$44.40 to 45.40 |
| Southern foundry, sil. 2.25 to 2.75     | 48.70            |
| Gray forge                              | 41.40            |
| Ohio silvery, sil. 8 per cent           | 58.90 to 60.40   |
| Standard low phos., Valley furnace      | 51.00 to 53.00   |

**Coke.**—Very little if any foundry coke is being offered for early shipment and dealers say that they would have no trouble in getting \$18 to \$19 per net ton had they any to sell. However, the demand is light, as most foundries have last half contracts at \$10 to \$12 on which shipments are starting.

**Sheets.**—Some round lots of sheets for the last half delivery have been placed by a Detroit automobile manufacturer recently and the demand from other sources is fairly heavy. A local mill is selling blue annealed sheets at 6c. to 6.25c. and black sheets at 8c. Mills have sold their output of automobile body sheets for the third quarter. These are quoted at 7.85c. for No. 22 gage.

**Bolts and Nuts.**—Many of the bolt and nut manufacturers have closed contracts with their regular trade for third quarter delivery and are so well sold up that they are turning away business. Inquiries are still active and prices are very firm.

**Old Material.**—The scrap market shows signs of a little more activity in heavy melting steel and prices on this grade are firmer. Heavy melting steel is being offered local mills at \$24 to \$24.50, but dealers claim that a round tonnage could not be bought at these prices. A Cleveland mill has purchased 1000 tons of machine shop turnings at \$13 and this sale has stiffened prices on this grade. Other grades are inactive. Little scrap is being moved, as few cars are available. A sale of pipe and flues is reported at \$24, but dealers are now asking \$25 to \$26 for this grade.

Dealers quote delivered consumers' yards in Cleveland and vicinity as follows:

|                                   |                    |
|-----------------------------------|--------------------|
| Heavy melting steel               | \$24.00 to \$24.50 |
| Steel rails, under 3 ft.          | 27.00 to 27.50     |
| Steel rails, rerolling            | 31.00 to 32.00     |
| Iron rails                        | 32.00 to 33.00     |
| Iron car axles                    | 41.00 to 42.00     |
| Steel car axles                   | 36.00 to 37.00     |
| Low phos. melting scrap           | 26.25 to 26.50     |
| Cast borings                      | 15.75 to 16.00     |
| Machine shop turnings             | 11.75 to 12.25     |
| Mixed borings and short turnings  | 15.25 to 15.50     |
| Short turnings for blast furnaces | 15.25 to 15.50     |
| Compressed steel                  | 19.25 to 19.50     |
| Railroad wrought                  | 28.00 to 29.00     |
| Railroad malleable                | 31.00 to 32.00     |
| Steel axle turnings               | 19.50 to 20.00     |
| Light bundle sheet scrap          | 14.00 to 14.25     |
| Drop forge flashings over 10 in.  | 14.50 to 15.00     |
| Drop forge flashings under 10 in. | 16.50 to 17.00     |
| No. 1 cast                        | 41.00 to 42.00     |
| No. 1 busheling                   | 18.50 to 18.75     |
| Railroad grate bars               | 32.00 to 33.00     |
| Stove plate                       | 32.00 to 33.00     |
| Cast iron wheels                  | 37.00 to 38.00     |
| Pipes and flues                   | 24.00 to 25.00     |

**Finished Iron and Steel.**—There is a good demand for practically all finished steel lines except structural material and plates. The former is very quiet and prompt deliveries can be secured on both plates and shapes. Two Eastern mills that have been quoting 4c., Pittsburgh, for structural material are now quoting 3.50c. to 3.75c., but cannot meet the competition of a Pittsburgh district mill that can make good shipments with a 3.25c. price. Tank plates are soft. Several mills are quoting these at 3.50c., but some producers are still selling boiler plates at a 3.75c. to 4c. basis. A Detroit automobile company has placed 4500 tons of plates with a Cleveland mill for automobile frames.

Ohio tank shops have been figuring on oil tanks requiring 2000 tons of plates, but this business has been placed with the Chicago Bridge & Iron Co. No new work has developed in the building field. Semi-finished steel is a little more active in new inquiries and requests for shipments on contracts, but the supply of sheet bars is more plentiful. Open-hearth sheet bars are being offered for prompt shipment at \$75. The transportation situation shows no improvement. Because of the scarcity of cars, steel shipments are very slow from the Pittsburgh district.

Cleveland warehouses quote steel bars at 3.27c. to 4.50c.; plates, 3.57c. to 5c., and structural material, 3.70c. to 4.50c.

## Chicago

CHICAGO, July 6.

Despite the new restrictions on the use of freight car equipment, iron and steel production in this district seems to be holding its own. Here and there a small mill has been forced to reduce operations, as, for example, a hard steel bar mill which went from double turn to single turn, but the larger interests have not lost ground. Both the leading interest and the foremost independent are operating at over 80 per cent of ingot capacity and have not added to their accumulations of finished material. On the contrary, the former has slightly reduced the stocks in its yards. In view of the chronic transportation difficulties, the opinion is gaining foothold in some quarters that the iron and steel market in the last half of this year will take much the same course that it did in the last half of 1919. It is believed that both production and shipments will be so severely curtailed that a pronounced scarcity market will develop. It is possible, of course, that consumers themselves will have to curtail production proportionately. In this connection, however, it is worthy of note that notwithstanding severe railroad troubles in June, two Detroit automobile manufacturers got out record outputs, one producing an average of 3500 cars daily and another 625 daily. While some observers expect a stiffer market, others take the opposite view on the grounds that iron and steel production and shipments in this district are much larger than is generally supposed. Throughout the railroad troubles of the last quarter, the two leading local steel interests have maintained an average production of about 75 per cent of ingot capacity, and two other important interests have done close to 100 per cent. Shipments also have been surprisingly large, despite accumulations in yards. Shipments of the two largest interests, although they fell far short of specifications and orders, were larger for the first six months of this year than for the same period a year ago, and proved much closer to the company's record for a half-year period than had been expected. In short, the iron and steel industry in this district has done measurably well in spite of the problems it has encountered. A shortage of fuel has been the principal limiting factor on output, as plants have been forced to depend largely upon the railroads for deliveries. Where vessels could be employed to move raw material, as in the case of ore and limestone, no difficulties have been experienced. The leading steel interest, in fact, received more ore and limestone in June than in any previous month in its history.

The market presents few new features this week. The top price which independents are getting for plates seems to have receded to 3.50c., Pittsburgh, while the maximum for shapes is about 3.25c. On the whole, the amount of railroad car business which is developing is rather satisfactory, but not in sufficient volume relatively to give an upward trend to plates and shapes. Bars, sheets, bolts, and nuts are still very strong, and pig iron and scrap are commencing to show life. The railroad situation undoubtedly is preventing much new inquiry from becoming orders. Manufacturers have large amounts of capital tied up in finished products which they are unable to ship, and when they approach the banks to borrow for the purpose of covering purchases of material, they are requested to reduce their loans when, as a matter of fact, circumstances would call for larger loans.

**Pig Iron.**—Although generally speaking the market is still rather inactive, a few good-sized inquiries and orders have developed during the past week. In fact, some sellers venture the opinion that the market is as lively as could be expected at this time of the year and may be termed "close to the normal." A steel foundry interest is inquiring for 1000 to 2000 tons of Bessemer and 1000 to 1500 tons of copper free low phosphorus. An Indianapolis consumer has bought 2000 tons of malleable at the market price in this district, while 1500 tons of Southern foundry for third quarter delivery is reported to have been bought at \$40 base, Birmingham, or \$2 below the market. This rumor has not been verified and sellers are of the opinion that if the purchase was actually made on those terms, the iron was probably resale material, as other current business does not indicate any weakness on the part of furnaces. Another recent sale of 500 tons of Southern iron, in fact, was closed at \$42 base, Birmingham, and it is assumed that the same furnaces figured on this inquiry as on the other one. The tendency in prices seems to be upward rather than in the other direction. Virginia iron has advanced \$1 to \$45, furnace, and a furnace in this district which offers iron only occasionally is now selling basic at the equivalent of \$48, delivered Chicago. The resale iron recently offered by a large Detroit automobile manufacturer has been largely disposed of without having much effect on the market.

The following quotations are for iron delivered, at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 50c. per ton.

|  |            |         |
|--|------------|---------|
| Lake Superior charcoal, averaging sil.                                   |            |         |
| 1.50 (other grades subject to usual differentials), deliv. at Chicago... |            | \$57.50 |
| Northern coke, No. 1, sil. 2.25 to 2.75, last half .....                 |            | 45.25   |
| Northern coke, No. 1, spot .....   |            | 47.25   |
| Northern coke foundry, No. 2, sil. 1.75 to 2.25 last half .....          |            | 43.00   |
| Northern coke, No. 2, spot .....   |            | 45.00   |
| Northern high phos. foundry, last half .....                             |            | 43.00   |
| Southern coke, No. 1 foundry and No. 1 soft sil. 2.75 to 3.25 .....      |            | 50.20   |
| Southern coke No. 2 foundry sil. 2.25 to 2.75 .....                      |            | 48.70   |
| Southern foundry sil. 1.75 to 2.25 .....                                 |            | 47.00   |
| Malleable not over 2.25 sil .....  |            | 43.50   |
| Basic .....  |            | 43.00   |
| Low phos. (copper free) .....  |            | 54.00   |
| Silvery, 7 per cent .....  | \$56.40 to | 59.80   |

**Ferroalloys.**—Although the market is still slow, \$235—ferromanganese seems to have disappeared and the best that can now be done on spot shipments is \$240, delivered. Ferrosilicon and spiegeleisen are also inactive. Quote ferromanganese spot, delivered, \$240 to \$250.

We quote 75 to 80 per cent ferromanganese, last half, delivered, \$200; third quarter, \$225; spot, \$240 to \$250, delivered; 50 per cent ferrosilicon at \$85 delivered; spiegeleisen, 18 to 22 per cent, \$70 to \$75 furnace.

**Plates.**—So far as the independents are concerned, the market on plates seems to have receded to about 3.50c., Pittsburgh. The demand from car builders is fairly good, but from other sources business is not developing at the usual rate. The Illinois Central has purchased 1000 refrigerator cars from the Pullman Co., for which the leading interests will supply 4700 tons of plates, shapes and bars. The Chicago & Northwestern has ordered 500 stock cars from the Bettendorf Co., which will require about 4000 tons of steel. The Nashville, Chattanooga & St. Louis has bought 100 coal cars from the Pressed Steel Car Co., for which the Carnegie Steel Co. will furnish 800 tons. The Universal Portland Cement Co. wants 300 box cars, which will account for 2400 tons. The Chicago, Milwaukee & St. Paul is inquiring for 1000 box cars and 2000 gondola cars. This is probably the inquiry which was mentioned anonymously a week ago. The Pere Marquette is inquiring for 12 locomotives, the Chicago & Eastern Illinois for six Pacific type and some other engines, and the Minneapolis & St. Louis has bought 15 Mikado type and five Pacific type locomotives from the American Locomotive Co.

The mill quotation is 2.65c. to 3.50c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 4.17c. for plates out of stock.

**Structural Material.**—The ruling independent price on structural shapes has apparently declined to a maximum of about 3.25c., Pittsburgh. The structural

field is still noteworthy for the absence of activity and there is little new fabricating business to report for the current week. One of the largest jobs which fabricators have been figuring on, the Physicians' and Dentists' Building, San Francisco, involving 1500 tons, will be built of reinforced concrete. Recent awards follow:

LaSalle Steel Co., cold drawn steel plant, Hammond, Ind. 454 tons, to Central States Bridge Co.  
Union Pacific drawbridge near Chatcolet, Idaho, 300 tons, to American Bridge Co.  
Great Northern Railroad, I-beam spans, 266 tons, to Wisconsin Bridge & Iron Works.  
Thilmany Pulp & Paper Co., plant addition, Kaukauna, Wis., 176 tons, to American Bridge Co.

**Current inquiries include:**

Fairbanks, Morse & Co., coal and sand station for New York Central Railroad, 210 tons.  
Swift & Co., fertilizer plant addition, Curtis Bay, Md., 250 tons.  
Peshtigo, Wis., Fibre company, two digestors, 150 tons.

The mill quotation is 2.45c. to 3.50c. Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 3.97c. for materials out of warehouse.

**Wire Products.**—Buyers are clamoring for goods more insistently and it is likely that this tendency will become even more pronounced in view of production difficulties. Mills are losing ground in their operations steadily and there is little hope of any marked improvement in transportation for months to come. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 109.

Mill quotations are 4.35c. to 6.50c. for No. 28 black; 3.55c. to 6c. for No. 10 blue annealed, and 5.70c. to 8.50c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight of 27c. per 100 lb. to Chicago. The lowest prices are those of March 21.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 7.02c.; No. 28 black, 8c.; No. 28 galvanized, 9.50c.

**Cast-Iron Pipe.**—Pipe remains slow and with municipalities still confronted with difficulties in financing, little activity is looked for in the near future. The National Cast Iron Pipe Co. is low bidder on 350 tons for Brillion, Wis. On July 1, Crystal Lake, Ill., received bids from contractors on 400 tons. Chicago took bids June 29 on 100 tons for a special assessment improvement. Prices continue firm.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$79.80; 6-in. and above, \$76.80; class A and gas pipe, \$2 extra.

**Bolts and Nuts.**—The demand is far in excess of the supply. In fact, one maker reports that business offered is five times his maximum output. Among current inquiries is one from an automobile manufacturer for 90,000,000 castle nuts. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 109.

Jobbers quote structural rivets, 5.62c.; boiler rivets, 5.72c.; machine bolts up to  $\frac{1}{8}$  x 4 in., 20 per cent off; larger sizes, 10 off; carriage bolts up to  $\frac{1}{8}$  x 6 in., 10 off; larger sizes, 5 off; hot pressed nuts, square tapped and hexagon tapped, list price; couch or lag screws, gimlet points, square heads, 30 per cent off. Quantity extras are unchanged.

**Bars.**—Mild steel bars continue very strong and bar iron has shown new strength as the result of new railroad orders. Prominent among recent railroad inquiries for bar iron is one for 3700 tons. Rail carbon steel bars are still dull and one mill has reduced operations from double turn to single turn because of its inability to secure old rails.

Mill prices are: Mild steel bars, 2.35c. to 4c.; Pittsburgh, taking a freight of 27c. per 100 lb.; common bar iron, 3.75c. to 4c., Chicago; rail carbon, 3.75c., mill.

Jobbers quote 3.87c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.80c. for rounds and 6.30c. for flats and squares, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. for orders up to 1000 lb.

**Sheets.**—The demand remains very strong with operation less satisfactory because of the hot weather. The fear of a shut down because of labor difficulties has been allayed through the agreement reached by independents with the Amalgamated Association.

Mill quotations are 4.35c. to 6.50c. for No. 28 black; 3.55c. to 6c. for No. 10 blue annealed, and 5.70c. to 8.50c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight of 27c. per 100 lb. to Chicago. The lowest prices are those of March 21.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 7.02c.; No. 28 black, 8c.; No. 28 galvanized, 9.50c.

**Rails and Track Supplies.**—New business in light rails and track supplies continues to develop in good volume and Western railroads are still trying to place

additional business in standard section rails, but as yet without success.

Standard Bessemer rails, \$45 to \$55; open hearth rails, \$47 to \$57. Light rails, 2.45c. to 3.50c. f.o.b. makers' mills. Standard railroad spikes, 3.55c. to 4c., Pittsburgh. Track bolts with square nuts, 4.90c. to 5c., Pittsburgh. Steel tie plates and steel angle bars, 2.75c., Pittsburgh and Chicago. Tie plates, iron, 3.75c. f.o.b. makers' mills.

**Old Material.**—A large steel interest which recently bought 10,000 tons of heavy melting and shoveling has increased its purchases to 30,000 tons. The heavy melting is reported to have brought \$23.50 and \$24, and the shoveling \$23 and \$23.50 per gross ton. The market is stronger in most departments, although the activity in open-hearth steel has not been duplicated in other grades. Rerolling rails are scarce not only here but in other sections, Eastern buyers having figured in this market of late. There has been some buying of rolling mill grades by Chicago bar iron mills, but purchases so far have been very conservative. Dealers feel that an upward swing in prices has commenced and that considerably higher levels will be reached before it stops. On the other hand, transportation conditions permit little scrap to move and unless this situation changes, business will be seriously affected. The Pennsylvania Railroad, Northwest System, offers 3000 tons and the Santa Fe 2000 tons.

We quote delivery in consumers' yards: Chicago and vicinity, all freight and transfer charges paid, as follows:

|                                       | Per Gross Ton      |
|---------------------------------------|--------------------|
| Iron rails                            | \$34.00 to \$35.00 |
| Relaying rails                        | 52.50 to 57.50     |
| Car wheels                            | 35.50 to 36.00     |
| Steel rails, rerolling                | 34.00 to 35.00     |
| Steel rails, less than 3 ft.          | 27.00 to 27.50     |
| Heavy melting steel                   | 23.50 to 24.00     |
| Frogs, switches and guards, cut apart | 23.50 to 24.00     |
| Shoveling steel                       | 23.00 to 23.50     |
| Low phosph. heavy melting steel       | 28.00 to 28.50     |
| Drop forge flashings                  | 20.50 to 21.00     |
|                                       | Per Net Ton        |
| Iron angles and splice bars           | \$31.00 to \$31.50 |
| Steel angle bars                      | 23.50 to 24.00     |
| Iron arch bars and transoms           | 32.00 to 32.50     |
| Iron car axles                        | 41.00 to 41.50     |
| Steel car axles                       | 33.50 to 34.00     |
| No. 1 busheling                       | 19.00 to 19.50     |
| No. 2 busheling                       | 12.50 to 13.00     |
| Cut forge                             | 23.50 to 24.00     |
| Pipes and flues                       | 16.00 to 16.50     |
| No. 1 railroad wrought                | 25.00 to 25.50     |
| No. 2 railroad wrought                | 23.50 to 24.00     |
| Steel knuckles and couplers           | 24.00 to 24.50     |
| Coil springs                          | 25.00 to 25.50     |
| No. 1 cast                            | 36.00 to 37.00     |
| Boiler punchings                      | 25.00 to 25.50     |
| Locomotive tires, smooth              | 23.00 to 23.50     |
| Machine shop turnings                 | 9.50 to 10.00      |
| Cast borings                          | 12.00 to 12.50     |
| Stove plate                           | 27.50 to 28.00     |
| Grate bars                            | 28.00 to 29.00     |
| Brake shoes                           | 24.50 to 25.00     |
| Railroad malleable                    | 26.50 to 27.00     |
| Agricultural malleable                | 26.00 to 26.50     |
| Country mixed                         | 15.50 to 16.50     |

**Lake Iron Ore Shipments in June**

The movement of Lake Superior iron ore by water in June and for the season up to July 1 exceeded that of the corresponding period in 1919. June shipments from upper lake docks amounted to 9,233,566 gross tons, against 7,980,839 tons in June, 1919, an increase of 1,252,727 tons. The total to July 1 was 16,440,505 tons, or 432,086 tons more than to July 1 last year. The shipments by ports for June, 1919 and 1920, and for the season were as follows in gross tons:

|             | June 1919 | June 1920 | To July 1, 1919 | To July 1, 1920 |
|-------------|-----------|-----------|-----------------|-----------------|
| Escanaba    | 759,647   | 1,147,136 | 1,414,527       | 1,942,809       |
| Marquette   | 296,127   | 553,367   | 447,876         | 928,403         |
| Ashland     | 951,287   | 1,299,820 | 1,768,292       | 2,312,869       |
| Superior    | 1,889,294 | 2,256,250 | 3,241,561       | 4,445,496       |
| Duluth      | 2,947,651 | 2,528,446 | 6,699,038       | 4,216,685       |
| Two Harbors | 1,136,833 | 1,448,547 | 2,437,125       | 2,594,243       |
| Total       | 7,980,839 | 9,233,566 | 16,008,419      | 16,440,505      |
| Increase    |           | 1,252,727 |                 | 432,086         |

Duluth shipments this year have been considerably less than to July 1, 1919. On the other hand, Escanaba, Marquette, Ashland and Superior, particularly the last named, show gains.

The Bessemer Gas Engine Co. has broken ground for two new shops at Grove City, Pa., one building, 120 x 150 ft., to be used as a foundry. The other building will be 150 x 300 ft. The Penn Bridge Co., Beaver Falls, Pa., is fabricating steel for the structures and will have charge of erection.

## British Tin Plate Lower

### Competition in Steel With America, the Continent and Australia—Ship Contracts Cancelled

(By Cable)

LONDON, ENGLAND, July 6.

With the approaching vacation season there will probably be a lessening in home demand for pig iron, thus enabling attention to be given to exports. The outlook is, however, obscure, but further price advances now seem improbable. Shipping and railroad situations are somewhat better and there were fair exports in June, but all against old contracts.

Two Cleveland furnaces are blowing out for repairs. A week ago Dorman, Long & Co., Ltd., lighted another furnace, and other makers are contemplating the same action. The Ebbw Vale Steel, Iron & Coal Co., Ltd., has started a blast furnace of a capacity of 3000 tons of pig iron weekly.

Foreign ore prices continue easy. The best Rubio was obtainable at about 58s., ex ship, Tees.

In tin plates a nervous feeling is developing with easing prices. Prompt tin plates are now obtainable at 68c. per base box, September delivery for 65c., and last quarter for 63s., f.o.b. works. Resales by dealers and Japan have had an effect on the market.

We quote per gross ton except when otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.95 for £1, as follows:

|  |    |                 |    |                      |
|--|----|-----------------|----|----------------------|
| Ship plates                                | 26 | 0 to 34         | 0  | \$102.44 to \$133.96 |
| Boiler plates                              | 28 | 10 to 37        | 0  | 112.29 to 145.78     |
| Tees                                       | 20 | 10 to 33        | 0  | 80.77 to 130.02      |
| Channels                                   | 25 | 15 to 33        | 5  | 101.45 to 131.00     |
| Beams                                      | 25 | 10 to 32        | 0  | 100.47 to 126.08     |
| Round bars, $\frac{3}{4}$ to 3 in.         | 28 | 0 to 33         | 10 | 110.32 to 132.00     |
| Rails, 60 lb. and up.                      | 23 | 0 to 25         | 0  | 90.62 to 98.50       |
| Billets                                    | 25 | 0 to 26         | 0  | 98.50 to 102.44      |
| Sheet and tin plate bars, Welsh            | 25 | 0 to 32         | 0  | 98.50 to 126.08      |
| Galvanized sheets, 24 g.                   | 54 | 0               |    | 212.76               |
| Black sheet, 24 g. to 26 g.                | 50 | 0 to 54         | 0  | 197.00 to 212.76     |
| Tin plate, base box*                       | 3  | 8               |    | 13.40                |
| Steel hoops                                | 38 | 15 to 39        | 0  | 152.67 to 153.65     |
| Cleveland basic iron                       | 11 | 7 $\frac{1}{2}$ |    | 44.75                |
| West Coast hematite                        | 14 | 15              |    | 58.11                |
| Cleveland No. 3 foundry (export to allies) | 10 | 5               |    | 40.37                |
| Ferromanganese                             | 35 | 0 to 40         | 0  | 137.90 to 157.60     |
| Coke                                       | 3  | 2 $\frac{3}{4}$ |    | 12.36                |

\*Prompt delivery; for Sept., 65s. (\$12.80); last quarter, 63s. (\$12.41).

The labor position is very precarious, though makers may grant substantial concessions to enable high priced contracts to be worked off.

Galvanized sheet makers are still quoting 54s. and upward, ignoring resales and refusing requests for cancellations. Galvanized and black sheets have been conspicuous in the material which Japan has been trying to resell.

Considerable cancellation of vessel contracts recently made must eventually tell on the steel market. Unconfirmed reports are that some makers are contemplating short time, and it is certain that strenuous efforts will be made to resist lower prices. Arrivals of Continental material are increasing in volume, besides some semi-finished steel from Australia for Lancashire consumers. Convinced that prices cannot be advanced further and that the next move is downward, buyers are hesitant and competition seems to be increasing. About a week ago it was noted that American makers were offering large angles, tees, beams and channels for £23, f.o.b., August-September shipment, though they were not so keen about selling small sections. American billets are obtainable at £23 and upward, c.i.f. Prices on the Continent are undoubtedly weaker, Belgium and Luxemburg works wanting business. Belgian  $\frac{5}{8}$ -in. steel bars sold at £27, f.o.b., July shipment. There is talk of French competition in the autumn.

The Baldwins, Ltd., Swansea, has commenced action

against Sperlings to enforce the latter's agreement to purchase a controlling interest in the ordinary shares in Baldwins. Harland & Wolff, Ltd., Belfast, has acquired control of David Colville & Sons, Ltd., Motherwell, Lanarkshire, which will give the shipbuilding establishment a large source of supply of material.

### Production Inadequate but New Inquiry Tapering Off—Tin Plate Workers' Demands

LONDON, ENGLAND, June 21.—Business in foreign ore is at present dull, in spite of the fact that there has been a slightly upward tendency in freight rates. Consumers, however, seem to be well bought and they are maintaining a waiting policy. The present price of best Bilbao Rubio of 50 per cent quality is around 60s. per ton, ex ship, Tees.

### Pig Iron Scarcity Unabated

With regard to Cleveland pig-iron, a great scarcity still exists, but there is some reason to hope that output may be increased before very long by the putting into operation of additional furnaces. Fuel supplies are coming along rather more regularly, but, even assuming that further furnaces are started, it does not look as if the production would be sufficient to meet requirements. A great many of the blast-furnaces in the Cleveland district are either owned or worked by firms who are consumers, and they are consequently themselves utilizing the greatest proportion of their output.

Meanwhile, practically all new export business is suspended, so that the existing supplies will be conserved for home consumers. Up to the present, no further change has been made in prices, and No. 1 Cleveland remains at 230s., while No. 3 G. M. B. stands at 217s. 6d. In Lancashire, the demand for foundry iron remains strong, with buyers apparently willing to concede almost any figure provided they can make sure of a supply of iron. In consequence of this, prices are somewhat irregular.

In regard to East Coast hematite, supplies are hardly as scarce as those of Cleveland pig-iron, but it is still hard to place business. Producers are not willing to sell ahead and are very well booked for early delivery. The price of mixed numbers remains at 260s. for the home trade, with an extra 5s. for shipment to European allies.

### Effort to Get Minette Ore

It is interesting to note that it is reported that representatives of British firms have recently been at Strassburg for the purpose of arranging shipments of Lorraine minette ore to England. Another interesting item is that Japan has been offering Japanese manufactured pig iron of an analysis similar to Gartsherrie at £17 to £18 c. i. f., for shipment in one or two months.

In regard to finished iron and steel, the chief factor is the chronic shortage of raw material, fuel and skilled labor, and this continues to hamper business of all kinds. As a consequence, makers still show a disinclination to quote, and new business being placed is considerably smaller than during recent weeks. The falling-off in trade is all the more noticeable owing to the pressure to place orders, which was the chief feature of the situation not very long ago. Although makers are inclined to quote, there seems at the same time to be a diminution in the amount of inquiry.

### Low Ebb of Export Business

Export business is now at a lower ebb than at any time since the war, and it is also noticeable that there is a restriction in home trade business. This is to a large extent due to the fear on the part of buyers that they will be caught on the top of the market and they are keeping out of the market to the best of their ability. The Continental position is also easier owing to lack of demand. It is reported that American merchant bars have been done at £26 c. i. f., United Kingdom, for forward delivery, and that constructional

material is also on offer at £26 c. i. f., September and further forward.

#### Tin Plate Wage Demands

With regard to the tin plate trade, it is understood that the workmen's unions have formulated their demands in respect of the wages agreement to be renewed at the beginning of July. It is understood that among the claims to be put forward are: (a) Adoption of a tonnage system of payment on the principle of equalization of wages for working different gages; (b) revision of existing rates in the Welsh mills, this to include a 50 per cent advance with an additional advance for working certain gages; (c) adoption of a sliding scale for regulating wages over and above the standard rates, the ascertained net selling price of tin plate bars to be taken into consideration upon fixing this scale; (d) all such increases to take effect as and from July 5; (e) working hours to be reduced to 6 per shift, the increase in wages to be taken on the basis of an 8-hr. shift; (f) double-manning of mills, where necessary number of mills working to be reduced, preference being given to the most modern mills; (g) appointment of a standing committee to advise upon the best methods of making use of idle plants; (h) steps to be taken immediately to form an organization for the purchasing of raw materials and for the selling and distribution of the finished product so as to eliminate speculation and merchants.

#### Prices and Conditions in Saar Valley

AIX-LA-CHAPELLE, June 15.—A visit to the Saar Valley just completed yields the following information on conditions there and in Germany:

Pig iron has dropped 185 marks per metric ton in Germany, sales now being reported at from 2165 to 2170 marks per ton. As a result quotations on steel are also lower. Heavy rails, which were quoted at 3772 marks, are now selling at 3320 marks; light rails, formerly 3752 marks, are now 3300 marks; iron bars, formerly 3250, are now 3200 marks; billets, formerly 3125, are now 2725 marks; sheets, heavy gage, formerly 4800 marks, are now 4040 marks, and thin gage (less than 1 mm. thick), which were formerly 5625 marks, are now 4865 marks.

Shipments of coke into Belgium as part of the indemnity, from April 22 to May 22, totaled 34,000 tons, and for the entire month of May 10,000 tons. The Saar Valley, which is neither French nor German, is in an unfortunate position, according to statements made at a recent meeting of industrial concerns of the Saar under Director-General Muller. It was pointed out that the greater part of the ore used in the blast furnaces of the Saar Valley comes from Alsace-Lorraine, and that since the latter has come under French control they are not receiving sufficient allowance to keep in blast. The coal mines and practically all industry of the Saar Valley are under the immediate control of French organizations. For the ore received from Lorraine, prices demanded are extremely high; furnaces are forced to pay about 20 francs against about 2.50 marks before the war. This, with the adverse exchange rates, brings the price for the German buyers up to from 2800 marks to 2900 marks per ton.

The cost of coal to consumers in the Saar Valley is from 385 marks to 400 marks per ton, the French making no reduction in price such as they are evidently giving to consumers of the Rhine-Westphalian district.

In the Rhine-Westphalian district conditions are much better, coal being quoted at less than half the price for the Saar. The following comparison of prices charged in the two districts for pig iron, coal and coke serves to show the handicap under which the producers of the Saar Valley are operating:

|          | Rhine-Westphalia | Saar Valley   |
|----------|------------------|---------------|
|          | Marks Per Ton    | Marks Per Ton |
| Pig iron | 2,850            | 5,600         |
| Coal     | 180              | 385           |
| Coke     | 235 to 240       | 535 to 600    |

The recent Grand-Ducal decree in Luxemburg, increasing the prices of coal and coke, and the fact that large German manufacturing concerns are given preference in supplies, have further handicapped the Saar Valley.

#### Pittsburgh Iron & Steel Market

(Continued from page 97)

sion deal which will stand the buyer, an electrical concern, 10c., base. All makers are getting fair sized shipments of hot-rolled bars, but are not moving much finished material because of the poor car supply.

**Coke.**—While no material easing yet is observed in prices of spot tonnages of furnace and foundry beehive oven coke, with both grades fetching from \$17 to \$18 per net ton at oven, it is believed that the market is at or near top. Basis for this belief is found in the fact that extra purchases for over the Fourth of July have so provided melters with supplies as to keep them out of the market for a time and in addition recent prices for fuel have so materially reduced the margin of profit for merchant pig iron producers that a number of them are planning on early suspension unless they are able to secure supplies for less money. Ovens in the more easterly end of the Connellsville district are getting fairly good car placements, but at the other end the complaint of a shortage is common. Considerable last half tonnage remains to be contracted, but not much business of this sort is being done, probably because of the uncertainty as to the effect of the transportation conditions on mine, oven and furnace operations. Last half contracts in furnace coke thus far reported have been on a 4 to 1 basis on Valley basic pig iron, or at flat prices of \$11.50 to \$12 per net ton oven. Full deliveries against the latter class of contracts are not certain so long as spot tonnages command such a big premium as at present.

**Old Material.**—Trading is feeling the restrictive effects of order No. 7, of the Car Service Association of the Interstate Commerce Commission, making it difficult to secure cars for shipment. Dealers are asking customers to hold up shipping instructions because of the car situation and also for more time for the completion of contracts. Since the railroads at a number of points are not permitting the loading of cars entering the steel plants with scrap, the buying of material in transit for the purpose of securing empty cars has dwindled. Narrowing steel works activities, due to the congestion of material waiting shipment and the observance of the Fourth of July, have reduced new demand for the open-hearth grades. In some grades, notably compressed and bundled sheet steel, this has found reflection in slightly weaker prices. The market, however, holds well on heavy melting steel. Machine shop turnings recently sold down to \$13.75 delivered to a Pittsburgh district sheet maker, but it is doubtful whether this price could be done to-day. The market maintains a firm tone on cast scrap of all sorts owing to limited supplies. The value of sheet bar crops is in dispute. Some dealers report \$27 delivered to be the highest price obtainable from consumers, while others report purchases at originating point up to \$30 and \$31.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates, as follows:

|   |                    |
|---|--------------------|
| Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monongahela, Midland and Pittsburgh, f.o.b. No. 1 cast | \$25.50 to \$26.00 |
| Bundled sheet steel   | 40.00 to 41.00     |
| Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.   | 34.00 to 35.00     |
| Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh                         | 21.00 to 21.50     |
| Railroad knuckles and couplers  | 15.00 to 16.00     |
| Railroad coil and leaf springs  | 29.00 to 29.50     |
| Railroad grate bars   | 29.00 to 31.00     |
| Low phosphorus melting stock (bloom and billet ends, heavy plates) $\frac{1}{4}$ in. and heavier                    | 31.00 to 32.00     |
| Railroad malleable  | 32.00 to 33.00     |
| Iron car axles  | 50.00 to 51.00     |
| Locomotive axles, steel   | 36.00 to 37.00     |
| Steel car axles   | 36.00 to 37.00     |
| Cast iron wheels  | 43.00 to 44.00     |
| Rolled steel wheels   | 29.00 to 30.00     |
| Machine shop turnings   | 14.00 to 14.50     |
| Sheet bar crop ends (at origin)   | 30.00 to 31.00     |
| Heavy steel axle turnings   | 21.50 to 22.00     |
| Heavy breakable cast  | 33.00 to 34.00     |
| Cast iron borings   | 18.00 to 19.00     |
| No. 1 railroad wrought  | 31.00 to 32.00     |

## Non-Ferrous Metals

### The Week's Prices

Cents Per Pound for Early Delivery

| June | Copper   |       | Tin   | Lead | Zinc     |           |      |
|------|----------|-------|-------|------|----------|-----------|------|
|      | New York | Lake  |       |      | New York | St. Louis |      |
| 30   | 19.00    | 19.00 | 48.25 | 8.25 | 8.00     | 7.95      | 7.60 |
| July |          |       |       |      |          |           |      |
| 1    | 19.00    | 19.00 | 49.00 | 8.25 | 8.00     | 8.05      | 7.70 |
| 2    | 19.00    | 19.00 | 50.25 | 8.25 | 8.00     | 8.15      | 7.80 |
| 3    | 19.00    | 19.00 | ...   | 8.25 | 8.00     | 8.15      | 7.80 |
| 6    | 19.00    | 19.00 | 48.00 | 8.25 | 8.00     | 8.20      | 7.85 |

NEW YORK, July 6.

In all the markets demand is light and the general course of business has been retarded by the holiday recess. Prices in most cases are firm. The copper market is quiet but strong. Demand for tin is light with prices somewhat erratic. Supplies of lead are scant despite the fact that there is very little demand. The zinc market is somewhat more active and prices are a little higher. There is not much change in antimony.

### New York

**Copper.**—The tone of the copper market is strong though buying is not heavy. There continues to be a moderate demand from domestic consumers for both prompt and forward delivery running into the fourth quarter. Purchasing on the part of foreign countries is also moderately active. The large producers are maintaining their price for both Lake and electrolytic copper at 19c., New York, for either prompt or forward delivery, even into the last quarter, and light sales have been made for all these positions at the full price. The general economic and labor situation is but slightly improved and stocks in producers' hands are gradually dwindling. It is believed that resale copper and metal in the hands of small dealers is pretty well absorbed, though from such sources and from small producers small lots of electrolytic copper can be obtained as low as 18.50c., New York, for early delivery. So far as statistics are known it appears probable that exports of copper for the first six months of this year will average 30,000 tons per month, which is significant in the fact that this is nearly 11,000 tons per month more than last year and not very far short of the exports in 1913, which were a record before the war.

**Copper Averages.**—The average price of both Lake and electrolytic copper for the month of June, based on daily quotations in THE IRON AGE, was 19c.

**Tin.**—As a rule dealers are more optimistic about the future price of tin and have been, therefore, the principal participants in the few sales that have been recently made. Consumers, however, show very little interest. In general, sales of tin are few, and spot Straits tin is both scarce and nominal. Late last week a few dealers made purchases of something less than 100 tons for future shipment at prices ranging from 47.75c. to 49c. and at the close on Friday 49.50c. was asked. In the last week spot Straits advanced as high as 50.25c. on June 1, but to-day is considerably lower at 48c., New York, all these prices, however, being nominal. The London market has also declined from £273 for spot Straits on July 2 to £259 per ton to-day. The decline in London is said to be due to the delivery of tin which was bought on contracts made three months ago and which is now forced on the market. The arrivals of tin in the month of June were 4730 tons, of which 3830 tons came in at Atlantic ports. There was delivered into consumption in the month of June 6500 tons and on June 30 there was in stock and landing 3586 tons. For the first six months of this year tin imports have been 27,743 tons, as compared with only 6341 tons in the first half of 1919.

**Lead.**—There has been very little change, but the undertone is strong. The market is quiet and prices are largely nominal. It is next to impossible to obtain prompt shipment lead, and the metal for prompt delivery is extremely scarce. It is a fact, however, that

there is very little demand for either of these positions. The price of the leading interest is unchanged at 7.75c., St. Louis, or 8c., New York, while the level of the outside market may be conservatively quoted at around 8c., St. Louis, or 8.25c., New York, nominal. It should be said that one estimate is almost as good as another in the latter case, some quotations ranging as high as 8.60c., New York.

**Zinc.**—The market is somewhat stronger and prices have advanced. There are three principal reasons to account for this. The most important one is that the majority of mines in the Joplin district have shut down for about a month so that the production of ore is to that extent reduced. Another reason is the appearance in the market of more inquiries for domestic consumption from both brass makers and galvanizers. A third reason is an advance of about £1 per ton each day recently in the London market. Inquiry is light and sales are only fair. Prime Western for delivery in the next two or three months is quoted at 7.85c., St. Louis, or 8.20c., New York. The larger producers are comfortably sold through July and are not actively interested in forward delivery.

**Antimony.**—The market is unchanged, and wholesale lots for early delivery are quoted at 7.50c. to 7.75c., New York, duty paid.

**Aluminum.**—Wholesale lots of virgin metal, 98 to 99 per cent pure, for early delivery are quoted at 33c., New York, by the leading interest and 31.50c. by outside sellers.

**Old Metals.**—There has been more inquiry this week with the result that the market has been firmer. Dealers' selling prices are nominally as follows:

|  | Cents<br>Per Lb. |
|--|------------------|
| Copper, heavy and crucible.....              | 18.25            |
| Copper, heavy and wire.....                  | 17.25            |
| Copper, light and bottoms.....               | 15.00            |
| Brass, heavy .....                           | 13.00            |
| Brass, light .....                           | 8.50             |
| Heavy machine composition.....               | 17.75            |
| No. 1 yellow rod brass turnings.....         | 10.50            |
| No. 1 fed brass or composition turnings..... | 15.00            |
| Lead, heavy .....                            | 7.75             |
| Lead, tea .....                              | 6.00             |
| Zinc .....                                   | 5.75             |

### St. Louis

July 3.—While there has been no marked demonstration of buying, both lead and zinc prices have displayed a slightly advancing tendency. In lead enough scattered buying has transpired to maintain life in the market, and producers state that prices cannot go lower without entirely wiping out their profit margins. At the close to-day the quotation on lead was from 8.20c. to 8.25c., with the leading independent asking 8.50c. per lb. Slab zinc finished the week at 7.55c., against 7.50c. the week before. In the Joplin district zinc ore at \$45 was about \$2 higher than a week ago; calamine steady at \$35. Lead ore was unchanged at \$90, with the demand fair. In less than car lots a fair business is being done, at generally steady prices. Quotations in that department were: Lead, 8.75c.; slab zinc, 8.50c.; tin, 50c.; copper, 19.50c.; antimony, 10.50c. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 8c.; heavy red brass, 14c.; light copper, 12c.; heavy yellow brass, 10c.; heavy copper and copper wire, 14c.; zinc, 4.50c.; lead, 6.50c.; pewter, 25c.; tinfoil, 38c.; tea lead, 3c.; aluminum, 20c.

Receipts and shipments of lead and slab zinc at St. Louis for the last two weeks were as follows:

|                          | Pigs of<br>Lead. | Slabs of<br>Zinc. |
|--------------------------|------------------|-------------------|
| Receipts:                |                  |                   |
| Week ending July 3.....  | 67,390           | 107,220           |
| Week ending June 26..... | 43,380           | 93,460            |
| Shipments:               |                  |                   |
| Week ending July 3.....  | 37,020           | 120,700           |
| Week ending June 26..... | 37,470           | 161,290           |

The Roller-Smith Co., 233 Broadway, New York, recently held a very successful sales conference at its works, at Bethlehem, Pa. An unusual feature was the presence of the entire foremen's conference of about 20 men at the dinner tendered by the factory management, at which G. Lindstrom, works manager, presided.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

New York, 27c.; Philadelphia, 25c.; Boston, 29½c.; Buffalo, 21c.; Cleveland, 17c.; Cincinnati, 23½c.; Indianapolis, 24½c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; all in carloads, minimum 36,000 lb. To Denver the rate is 99c., minimum carload 40,000 lb.; Omaha, 59c., minimum carload 36,000 lb.; New Orleans, 38½c.; minimum carload 36,000 lb.; Birmingham, 57½c., minimum carload 36,000 lb. To the Pacific Coast the rate is \$1.25 per 100 lb. on articles of iron and steel, minimum carloads 80,000 lb., while the structural steel rate is \$1.25, minimum carload 50,000 lb., or \$1.315, minimum carload 40,000 lb. The rate on ship plates, Pittsburgh to Pacific Coast, is \$1 per 100 lb., minimum carload 80,000 lb. On wrought iron and steel pipe, the rate from Pittsburgh to Kansas City is 56c., to St. Paul 49½c.; to Denver, 99c.; to Omaha, 56c., all in carload lots, minimum 46,000 lb. To Jacksonville, Fla., all rail carloads, 41½c., minimum 36,000 lb., less than carloads, 59c.; rail and water, carloads 34½c., minimum 36,000 lb.; less than carloads 46½c. On iron and steel items not noted above, the rates vary somewhat, and are given in detail in the regular railroad tariffs.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in., angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 245c. to 3.50c.

## Wire Products

Wire nails, \$3.25 to \$4.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 and shorter than 1 in. \$2. Bright basic wire, \$3 to \$4 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3 to \$3.50; galvanized wire, \$3.70 to \$4.70; galvanized barbed wire and fence staples, \$4.10 to \$5.10; painted barbed wire, \$3.40 to \$4.15; polished fence staples, \$3.40 to \$4.50; cement-coated nails, per count keg, \$2.85 to \$4.10; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60 per cent off list for carload lots, 59 per cent for 1000-rod lots, and 58 per cent for small lots, f.o.b. Pittsburgh.

## Bolts, Nuts and Rivets

Large structural and ship rivets..... \$4.50 base  
Large boiler rivets..... 4.60 base  
Small rivets..... 40 to 50 per cent off list  
Small machine bolts, rolled threads, 40 and 5 per cent off list  
Same sizes in cut threads..... 30 and 10 per cent off list  
Longer and larger sizes of machine bolts..... 30 per cent off list  
Carriage bolts, ½ in. x 6 in.:  
    Smaller and shorter, rolled threads..... 30 and 10 per cent off list  
    Cut threads..... 30 per cent off list  
    Longer and larger sizes..... 25 per cent off list  
Lag bolts..... 45 per cent off list  
Flow bolts, Nos. 1, 2 and 3 head..... 35 per cent off list  
    Other style heads..... 20 per cent extra  
Machine bolts, c.p.c. and t. nuts ¾ in. x 4 in.:  
    Smaller and shorter..... 30 per cent off list  
    Longer and larger sizes..... 20 per cent off list  
Hot pressed and cold pressed sq. or hex. blank nuts..... \$1.50 off list  
Tapped nuts..... \$1.00 off list  
Semi-finished hex. nuts, U. S. S. and S. A. E.:  
    5/8-in. and larger..... 50 and 10 per cent off list  
    9/16-in. and smaller..... 50 and 10 per cent off list  
    9/16-in. and smaller, A. L. A. M. or S. A. E..... 70, 10 and 5 per cent off list  
Stove bolts in packages..... 60 and 10 per cent off list  
Stove bolts in bulk..... 60, 10 and 2 ½ per cent off list  
Tire bolts..... 55 and 10 per cent off list  
Track bolts..... 6c. base  
    One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs 25c. extra.  
    All prices carry standard extras f.o.b. Pittsburgh.

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52 to \$80; chain rods, \$75 to \$80; screw rivet and bolt rods and other rods of that character, \$80 to \$85. Prices on high carbon rods are irregular. They range from \$80 to \$100, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes, ½ to 9 ½-in. and larger, \$4 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ¾-in. and 7 ½-in., \$4.25; 5 ½-in., \$5; track bolts, \$4.90 to \$5. Post and barge spikes, \$4.50 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, \$3 to \$4 per 100 lb.

## Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coating, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 2.35c. to 4c. from mill. Common bar iron, 4.50c.

## Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

| Butt Weld        |            |            | Iron       |              |              |
|------------------|------------|------------|------------|--------------|--------------|
| Inches           | Black      | Galv.      | Inches     | Black        | Galv.        |
| 1 ½, 3/4 and 5/8 | 47 to 50 ½ | 30 ½ to 24 | 3/8        | 15 ½ to 25 ½ | +1 ½ to 11 ½ |
| 1 ½              | 50 to 54 ½ | 36 ½ to 40 | 1 ½        | 19 ½ to 29 ½ | +1 ½ to 11 ½ |
| 5/8 to 3         | 54 to 57 ½ | 41 ½ to 44 | 3/4 to 1 ½ | 24 ½ to 34 ½ | 8 to 18 ½    |

| Lap Weld   |            |              |
|------------|------------|--------------|
| 2          | 2 ½ to 6   | 7 to 12      |
| 47 to 50 ½ | 34 ½ to 38 | 20 ½ to 28 ½ |
| 50 to 53 ½ | 37 ½ to 41 | 22 ½ to 30 ½ |
| 47 to 50 ½ | 33 ½ to 37 | 19 ½ to 27 ½ |
| 13 and 14  | 37 ½ to 41 | 6 ½ to 14 ½  |
| 15         | 35 to 38 ½ |              |

| Butt Weld, extra strong, plain ends |            |            |
|-------------------------------------|------------|------------|
| 1 ½, 3/4 and 5/8                    | 43 to 46 ½ | 35 ½ to 39 |
| 1 ½                                 | 48 to 51 ½ | 35 ½ to 39 |
| 5/8 to 1 ½                          | 52 to 55 ½ | 39 ½ to 43 |
| 2 to 3                              | 53 to 56 ½ | 40 ½ to 44 |

| Lap Weld, extra strong, plain ends |            |              |
|------------------------------------|------------|--------------|
| 2                                  | 2 ½ to 4   | 7 to 8       |
| 45 to 48 ½                         | 33 ½ to 37 | 2 ½ to 4     |
| 48 to 51 ½                         | 36 ½ to 40 | 22 ½ to 30 ½ |
| 47 to 50 ½                         | 35 ½ to 39 | 14 ½ to 22 ½ |
| 7 to 8                             | 43 to 46 ½ | 7 to 8       |
| 9 to 12                            | 33 to 41 ½ | 9 to 12      |

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

## Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

| Lap Welded Steel |      | Charcoal Iron      |       |
|------------------|------|--------------------|-------|
| 3 ½ to 4 ½ in.   | 40 ½ | 1 ½ and 2 ½ in.    | +20   |
| 3 ½ to 3 ¾ in.   | 30 ½ | 2 and 2 ½ in.      | +10   |
| 2 ½ in.          | 24   | 2 ½ and 2 ¾ in.    | +1    |
| 1 ¾ to 2 in.     | 19 ½ | 3 and 3 ¼ in.      | — 1 ½ |
|                  |      | 3 ½, 4 and 4 ½ in. | — 8   |

| Standard Commercial Seamless—Cold Drawn or Hot Rolled |  | Per Net Ton | Per Net Ton             |
|---|--|-------------|-------------------------|
| 1 in.   |  | \$327       | 1 ½ in. .... \$207      |
| 1 ¼ in.   |  | 267         | 2 to 2 ½ in. .... 177   |
| 1 ¾ in.   |  | 257         | 2 ½ to 3 ½ in. .... 167 |
| 1 ½ in.   |  | 207         | 4 in. .... 187          |
|   |  |             | 4 ½ to 5 in. .... 207   |

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

## Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For reasonably prompt delivery, mills getting up to the prices quoted in the right-hand column:

| Blue Annealed—Bessemer |               | Cents per lb. |
|------------------------|---------------|---------------|
| No.                    | 8 and heavier | 3.50 to 6.95  |
| 9                      | and 10 (base) | 3.55 to 7.00  |
| 11 and 12              |               | 3.60 to 7.05  |
| 13 and 14              |               | 3.65 to 7.10  |
| 15 and 16              |               | 3.75 to 7.20  |

| Box Annealed, One Pass Cold Rolled—Bessemer |              |
|---|--------------|
| Nos. 17 to 21                               | 4.15 to 7.80 |
| Nos. 22 to 24                               | 4.20 to 7.85 |
| Nos. 25 and 26                              | 4.25 to 7.90 |
| No. 27                                      | 4.30 to 7.95 |
| No. 28 (base)                               | 4.35 to 8.00 |
| No. 29                                      | 4.45 to 8.10 |
| No. 30                                      | 4.55 to 8.20 |

| Galvanized Black Sheet Gage—Bessemer |              |
|--------------------------------------|--------------|
| Nos. 10 and 11                       | 4.70 to 8.00 |
| Nos. 12 to 14                        | 4.80 to 8.10 |
| Nos. 15 and 16                       | 4.95 to 8.25 |
| Nos. 17 to 21                        | 5.10 to 8.40 |
| Nos. 22 to 24                        | 5.25 to 8.55 |
| Nos. 25 and 26                       | 5.40 to 8.70 |
| No. 27                               | 5.55 to 8.85 |
| No. 28 (base)                        | 5.70 to 9.00 |
| No. 29                               | 5.95 to 9.25 |
| No. 30                               | 6.20 to 9.50 |

| Tin-Mill Black Plate—Bessemer |              |
|-------------------------------|--------------|
| Nos. 15 and 16                | 4.15 to 6.15 |
| Nos. 17 to 21                 | 4.20 to 6.20 |
| Nos. 22 to 24                 | 4.25 to 6.25 |
| Nos. 25 to 27                 | 4.30 to 6.30 |
| No. 28 (base)                 | 4.35 to 6.35 |
| No. 29                        | 4.40 to 6.40 |
| No. 30                        | 4.40 to 6.40 |
| Nos. 30 ½ and 31              | 4.45 to 6.45 |

## PERSONAL

James Bryden, works manager, Smith & McLean, Ltd., Glasgow, Scotland, maker of sheets and plates, bars, hoops and strips, sailed from New York on July 3 after a two-months visit through steel plants in this country.

Edward C. Wells, formerly engineer with Ford, Bacon & Davis, New York, is now at the Holt, Ala., office of the Central Foundry Co.

J. I. Capps has been appointed purchasing agent of the American Manganese Steel Co., with offices at Chicago Heights, Ill., effective July 1. He succeeds N. C. Peebles, who will devote his time exclusively to sales work.

G. W. Nigh has become associated with the Kewanee Boiler Co., Kewanee, Ill., having left the Chicago, Burlington & Quincy Railroad.

H. F. Noyes, H. G. Darling and E. Lewis of the Broken Hill Proprietary Co., Australia, are visiting steel plants in this country. Mr. Noyes is an American, and is superintendent of blast furnaces for the company. Mr. Darling is one of the directors, and Mr. Lewis is assistant to the general manager of the company. The company is building two more blast furnaces and needs to increase the open-hearth or steel making capacity to take care of the iron.

L. A. Prescott, formerly chief draftsman, Blawnox Co., Blawnox, Pa., has been promoted to the position of works manager of the C. D. Pruden Corporation, Baltimore, a subsidiary.

Robert R. Lassiter, formerly mechanical superintendent Richmnd Forgings Corporation, Richmond, Va., is now assistant to the president of the Dale-Brewster Machinery Co., Inc., his headquarters being in New York.

Arthur S. Booth has been appointed assistant general manager of sales of the Sharon Steel Hcov Co., with headquarters at Sharon, Pa., effective July 15. R. C. Garlick, formerly district sales manager at Cleveland, will succeed Mr. Booth as manager of the Chicago branch. Thomas Galbreath of the general sales office force has been named manager of the Philadelphia office. B. F. Kibbee is general manager of sales.

Henry M. Newhall, Jr., is now president of Newhall Chain Forge & Iron Co., New Jersey Foundry & Machine Co., and the Diamond Expansion Bolt Co. with offices in New York.

Major T. T. Williams, formerly with the Packard Motor Car Co., as an efficiency engineer, has been made executive manager of the Economy Baler Co., Ann Arbor, Mich. In the recent military operations of this country Major Williams was in charge of the aerial photographic unit.

Charles H. Hills, formerly sales manager with the Seattle branch, Worthington Pump & Machinery Corporation, is now in the marine department of the same company in the New York office.

John D. Crawford has been transferred from the Akron to the Cleveland office of the Wellman-Seaver Morgan Co.

Nelson A. Zeiger has joined the engineering department, Buckeye Steel Casting Co., Columbus, having resigned his position with the Eastman Kodak Co., Rochester.

H. A. Meeker, formerly manager steel department, Ford Corporation, exporter, Singer Building, New York, has become associated with the American Car & Foundry Co., as buyer in the purchasing department at New York.

George Friedkin has become maintenance engineer with the Ingalls-Shepard Forging Co., Harvey, Ill.

J. F. Miller, Chippewa Falls, Wis., has been appointed general manager of the West Coast Pump Co., Portland, Ore., organized to act as selling representative of the Chippewa Foundry & Machine Co., in Washington, Oregon, California and Idaho.

Stanley P. Stewart has left the Bass Foundry & Machine Co., Fort Wayne, Ind., to join the H. H. Franklin Mfg. Co., Syracuse, N. Y.

R. Percival Smith, of David Colville & Sons Co., well-known steel manufacturer of Scotland, is now in the United States.

J. G. Schabert, formerly with A. H. Emery, Glenbrook, Conn., is now with the Yale & Towne Mfg. Co., Stamford, Conn.

Lloyd E. Larson, formerly superintendent gage and tool division, Frankford Arsenal, has joined J. Wilhelm, Inc., New York, as vice-president and consulting engineer.

George W. Peffer, formerly superintendent, Lansingville plant, Republic Iron & Steel Co., at Youngstown, Ohio, has been appointed general superintendent of the Sharon Steel Hoop Co., Sharon, Pa., succeeding Noble Jones, resigned. Mr. Peffer was identified with the Republic company for nine years, resigning a year and a half ago to become associated with the Donner Steel Co., Buffalo, N. Y.

R. S. Johnson has become factory manager of the Parkersburg Machine Co., Parkersburg, W. Va., having occupied a similar position with the Smalley-General Co., Bay City, Mich.

William D. Brundage, manager, Albion hub division, Hayes Wheel Co., Jackson, Mich., has been made assistant manager of the Hayes Wheel plants, with headquarters in Jackson. Fred S. Brown succeeds him as manager of the Albion plant.

Elliot A. Kebler, for many years with iron manufacturing companies and now vice-president Schaffer Engineering Co., Pittsburgh, is one of the officers of the Fawcett Machine Co., which recently joined the Schaffer organization for the making of gears and special machinery.

Charles Gaspar, in charge of sales at the Detroit office of the National Malleable Castings Co., has gone to Cleveland to become assistant sales manager of the company. He is succeeded by L. W. DeWitt, of the Washington office.

J. A. Widmer, experimental engineer, Sperry Gyroscope Co., has become development engineer with the Square D Co., Detroit.

George W. Sargent, formerly vice-president and metallurgist Crucible Steel Co. of America, is head of the Molybdenum Corporation of America, recently incorporated under the laws of Delaware, with a capital of \$5,000,000. The new company has taken over the Electric Reduction Co., Washington, Pa., and the Western Molybdenum Mines Co., with properties at Questa, N. M. Mr. Sargent, who was with the Crucible Steel Co. for ten years, previously had been with the Carpenter Steel Co. Other officers of the new company include J. W. Weitzenkorn, vice-president and general manager; James S. Crawford, secretary, and W. H. Weis, treasurer. The general offices of the new company are located in the Empire Building, Pittsburgh.

Ernest S. Jubell, formerly in charge of materials at the plant of the Haskell & Barker Car Co., Michigan City, Ind., has been appointed general superintendent of the Union Railway Equipment Co., Hammond, Ind.

Edwin R. Douglas, formerly with the American Rolling Mill Co., is now with the Cincinnati Ball Crank Co., Cincinnati.

A. H. Grayburn, for the past four years assistant to the vice-president, Norma Co. of America, bearings, New York, has been made assistant secretary and assistant treasurer. Norman Bell has been made assistant sales manager, this appointment following a connection of over three years with the concern as sales engineer. Mr. Bell's training and experience in the mechanical and automotive fields includes a former association with a leading British manufacturer of motor cars, and nearly four years in charge of the motor accessories department of the Lunkenheimer Co., Cincinnati.

The Carpenter Steel Co., Reading, Pa., announces the election of Fred A. Bigelow as president, succeeding W. B. Kunhardt, who becomes chairman of the board of directors. He was graduated from Worcester Polytechnic Institute in 1891 and was employed by Spaulding & Jennings Co. (later part of the Crucible

Steel Co. of America) as chemist in 1892. In 1900 he was sent to Providence, R. I., as manager of the Providence warehouse and territory for the Crucible Steel Co. of America. He entered the employ of the Carpenter Steel Co. in 1904 as New England salesman and in 1910 transferred to the Cleveland warehouse as Western sales manager. In May, 1915, he was transferred to Reading as general sales manager.

Allan Fraser has been promoted from the position of assistant general sales manager to general sales manager of the Wickwire-Spencer Steel Corporation, Worcester, Mass. He was graduated from the Polytechnic Institute, Brooklyn, where he specialized in iron and steel manufacture. Then he became associated with James A. Farrell. Upon the formation of the American Steel & Wire Co., he became a salesman, later managing the company's sales offices in Buffalo. Next he became Eastern sales manager of the Wickwire Steel Co. When this company consolidated with the Clinton-Wright Wire Co. last fall, Mr. Fraser was placed in the position he has just vacated.

Scott F. Taylor, for some years superintendent Becker Milling Machine Co., Hyde Park, Boston, has been made works manager. Mr. Taylor is succeeded by Walter P. Pyne, who has been with the company for six years.

George Wagstaff has joined the sales force of the Central Steel Co., Massillon, Ohio. For three years he was sales manager for the Onondaga Steel Co., Syracuse, N. Y., and for six years prior to that was with the Bethlehem Steel Co. as sales representative in the Cleveland district. He is leaving the first of the month to become district manager of sales in charge of the Chicago district with offices in the People's Gas Building. Clarence Beach, present manager of the Chicago office, will open up new offices in Indianapolis, covering the Indiana, Western Ohio, and Southern territory adjacent. He will be permanently located in Indianapolis after July 15.

Prof. Hector James Hughes has been made dean of the Harvard University Engineering School, Cambridge, Mass., to succeed Comfort Avery Adams, who recently resigned to become chairman of the National Research Council.

William T. Smith was elected president of the H. B. Smith Co., Westfield, Mass., boilers, etc., at the annual meeting. Other officers elected were: William B. Reed, vice-president; Philip C. Smith, treasurer; William E. Gibbs, clerk.

The Electric Storage Battery Co. announces the appointment of George D. Luther as soliciting agent in Seattle with offices at 811 White Building. He joined the sales force of the Boston office of this company in 1907. In 1910 he was made soliciting agent in Denver, in which capacity he served until his recent appointment.

Gen. Guy E. Tripp, chairman of the board of the Westinghouse Electric & Mfg. Co., has been elected treasurer of the Maine Society of New York.

Laurence G. Bean, Worcester, Mass., has been made sales engineer, the Bristol Co., Waterbury, Conn., recording instruments. For a short time Mr. Bean will be located in the New York office of the company.

A. H. Mitchel and E. R. Abbott, formerly with H. W. Cotten, Inc., have become associated with the Coe-Stapley Corporation, West Haven, Conn. They will make their headquarters at 136 Liberty Street, New York, and will be in charge of the contract sales work of the company, covering quantity production of sheet metal products, stamped, drawn or pierced work, or sheet metal specialties, completely assembled, of any metal and any finish.

The General Briquetting Co., 25 Broad Street, New York, has appointed Thomas F. Kelly, formerly with the Lackawanna Steel Co., sales engineer for the flue dust, ore and by-products department.

G. V. Nightingale, formerly Western sales manager for the Wilson-Maeulen Co., manufacturer of electric pyrometers, with headquarters in Chicago, and E. C. Baker, formerly district manager of the same

company in Chicago, have formed a partnership under the name of Nightingale & Baker, with offices at 163 West Washington Street, Chicago. Nightingale & Baker will represent the Wilson-Maeulen Co. as general agents in all territory west and southwest of Ohio and Michigan.

J. Leonard Reogle, president Vanadium Corporation of America sailed for Europe on the Mauretania, July 1, for a ten weeks stay in the interest of the Reogle Steel Co. and the Vanadium company. The purpose of his trip is to figure on some large contracts.

J. W. McQueen, president Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., who has been on an extended recreation trip in the Northwest, returned July 1.

J. M. Cook, formerly Cleveland sales representative Norton Co., Worcester, Mass., has been appointed Cleveland representative of the Waltham Grinding Wheel Co., Waltham, Mass., with headquarters in the offices of the Republic Tool & Mfg. Co.

## OBITUARY

CHARLES M. HURST, former president of Morehouse & Wells Co., jobber of hardware, Decatur, Ill., died June 26 at his home in that city at the age of 61. According to an editorial in a local paper the store of this firm was "a show place before the fire of 1909," and was "rebuilt better than before." He was one of the founders and also president of the Decatur Chamber of Commerce. After attending high school in 1879 he joined the firm with which he was always connected. In 1882 he was taken into partnership and upon incorporation was made secretary and treasurer. In January, 1908, he was elected president, which position he held actively until two years ago. He had a leading part in many civic enterprises and was one of those most instrumental in bringing the Wabash locomotive shops to Decatur.

CHARLES IRWIN TRAVELLI died recently at his home, 173 Chestnut Street, West Newton, Mass., aged 62 years. He was born in Pittsburgh, and shortly after graduating from the University of Pennsylvania became associated with the Pittsburgh Steel Casting Co. and later with the American Steel Foundry and the General Electric Co.

HENRY F. DINGER, for a number of years treasurer Standard Gauge Steel Co., Beaver Falls, Pa., died at his home in Pittsburgh recently. He was born in Dresden, Germany, in 1845, coming to this country with his parents when a small child and locating in Ohio.

In furtherance of the plan of Joseph G. Butler, Jr., director of the American Iron & Steel Institute, to have installed in the McKinley Memorial Building at Niles, Ohio, busts and tablets of leaders in American industry, a bronze representation of Henry Bishop Perkins, one of the most influential of the earlier manufacturers of the Mahoning Valley, has been placed in the building. A tablet in memory of Gen. James L. Botsford, one of the early iron manufacturers of the Valley, who was in McKinley's regiment during the Civil War, from which he emerged as a general, is to be installed.

W. W. Hawley has been appointed receiver for the Huntington Steel Foundry Co., Huntington, Ind., on application of A. L. White, president of the company. Since the close of the war, during which the plant was engaged in Government work, it has been difficult to find sufficient domestic trade or to get material or cars in which to ship the finished product. The receiver will keep the plant in operation for the time being.

The Government has decided to take over the entire stretch of land on which the Ancor nitrate plant, near Cincinnati, was erected. The order to proceed with the appraisal and condemnation of the land, which contains 72 acres, does not state to what use the land will be put.

## BELGIUM SELLS FOR EXPORT

### Offers Plates and Sheets to England and South America—Germany Offers Billets

According to reports received by one exporter in New York, the chief cause of the present Japanese depression, the Chinese boycott, is still operating to prevent recovery, Japanese trade with Chinese merchants having decreased to less than a quarter of its former size. Reports are still pessimistic. Some of the resale material, chiefly wire nails and galvanized wire, is being purchased by the Dutch East Indies and British possessions. A few inquiries are being received from Japan from time to time for special material. One company mentions a fairly large order recently received for four immersion galvanized wire.

The demand for ship plates from European markets continues heavy. An exporter to these markets recently shipped about 200 tons of ship plates to a yard in Italy and a small order of rivet bars to a French shipyard. Sales of pig iron to England are still be-

ing made and there are some inquiries for iron bars, billets, wire rods and sheet bars. Ship plates, however, still hold first place in a number of orders. The number of British buyers who purchase on price is increasing and with Belgian mills offering ship plates at considerably under the prevailing prices in England there is the prospect of a decrease in sales of this material. Germany is offering small tonnages of billets at low prices and the prospects of fairly early delivery are considered by the British as quite as good as American sellers can offer under present conditions.

The attitude of South American buyers is much the same as the British. The British are offering plain galvanized wire and Belgian rolling mills are accepting orders for plates and sheets. Small orders continue to be placed with American companies, but the tendency is to turn toward Europe.

Transportation is the greatest handicap to exporters, who are inclined to be somewhat pessimistic as to the possibilities of anything like an early improvement. One of the largest general exporters states that it has more than \$1,000,000 worth of iron and steel orders unshipped.

## Canadian Markets

### Active Demand for Finished Steel—Sheets Scarce—Scrap Dull

TORONTO, July 6.—There is a good demand for all classes of iron and steel, but dealers are now experiencing a shortage in some lines. Dealers report a fair demand for both common bar iron and steel, as well as steel bars, and they have sufficient of these in stock to take care of all present needs. Cold-rolled steel is scarce, with a heavy demand. Some dealers state that there is a shortage in reinforcing bars and many inquiries are coming in. Inquiries for steel hoops and angles are numerous, but no shortage is reported in supplies. While some dealers say they have enough of some of the commodities mentioned above to keep them going for a short time, there is also a feeling throughout the trade that unless new material arrives more freely in the near future the supply on hand will drop considerably below the demand. The prices Toronto dealers are quoting on iron and steel are as follows:

|   | Per<br>100 lb. |
|---|----------------|
| Steel bars, base.....                             | \$5.50         |
| Common bar steel, 3/16-in. and lighter.....       | 6.00           |
| Common bar steel, 1/4-in. and heavier.....        | 5.50           |
| Common bar iron, 3/16-in. and lighter.....        | 6.00           |
| Common bar iron, 1/4-in. and heavier.....         | 5.50           |
| Cold-rolled steel, base, rounds.....              | 7.00           |
| Cold-rolled steel, square, flats and hexagon..... | 7.50           |
| Reinforcing bars.....                             | 5.50           |
| Steel hoops.....                                  | 6.50           |
| Angles .....                                      | 5.70           |

### Famine in Sheets

A famine has been prevailing in the Canadian market in so far as black and galvanized sheets are concerned, and although some shipments are beginning to arrive, these are merely a drop in the bucket in comparison with the heavy demand for sheets. Local dealers state that they have numerous orders on their books for both black and galvanized sheets, and that when a car arrives it is immediately turned over to the consumers and that nothing of what is now coming in is available for stock. Manufacturers who are urgently in need of sheets are clamoring around the dealers for material in order to keep their plants in operation, several of which have been forced to greatly curtail production, while others have been unable to secure enough to keep their plants going at all. The scarcity of black and galvanized sheets has held up the production of corrugated sheets, for which there is likewise a pressing demand. Manufacturers of corrugated sheets say their business in these commodities has been paralyzed and they are under the necessity of turning down orders every day on account of not being able to supply the demand. The demand for 3/16-in. and 1/4-in. plate is active. Dealers have been able to

take care of all the business offering. There is now, however, a feeling that unless shipments of plates begin to make their appearance without much delay, the supplies on hand, which are now going fast, will shortly be disposed of. Following are the prices dealers are quoting on sheets and plates:

Black sheets, No. 28, \$9.65; galvanized sheets, U. S. No. 28, Premier, \$11.45 to \$11.70; Apollo, \$11.45 to \$11.85; corrugated sheets, No. 28, galvanized, \$10.50, painted, \$8.50 per 100 lb. Plates, 3/16-in., \$7 and 1/4-in. boiler plate \$7 per 100 lb.

The above prices are only nominal quotations, as in most cases buyers are under the necessity of paying a premium on sheets in order to get what they require, and when dealers are forced to go into the local market for sheets, in order to fill an order for a customer, they have to charge a premium or else there is a loss on the transaction. Those urgently in need of material are quite willing to pay even a stiff premium, if only they can secure what they want and enough of it.

### Scrap Market Dull

During the past three or four weeks business has been falling off in the iron and steel scrap metal market, and now dealers state that there is little or no demand for the materials they have to dispose of. Up to a short time ago the demand for heavy melting steel, stove plate and cast scrap was considerably above the supply, but dealers now say they have enough on hand to take care of all the orders they are receiving. Labor troubles and the shortage of fuel have held up operations at the steel plants and foundries throughout Ontario and Quebec, and these have been forced to greatly curtail production and consequently their scrap requirements have been for some weeks considerably below normal. Steel plants which contracted for supplies of scrap early in the year are under the necessity of accepting delivery and this material is not being consumed as fast as it is received. Thus they are carrying large stocks in their yards.

Following are Toronto dealers' buying prices:

|                                   | Per<br>Gross<br>Ton |
|-----------------------------------|---------------------|
| Heavy melting steel.....          | \$21.00             |
| Steel turnings .....              | 13.00               |
| Machine shop turnings .....       | 13.00               |
| Cast borings .....                | 13.00               |
| No. 2 busheling.....              | 13.00               |
| Pipe, wrought.....                | 16.00               |
| Bundled sheet scrap.....          | 9.00                |
| Hydraulic compressed sheets ..... | 11.00               |
| Heavy axle turnings .....         | 16.00               |
| Boiler plate .....                | 19.00               |
| Axes, wrought iron .....          | 20.00               |
| Rails .....                       | 20.00               |
| No. 1 machinery cast .....        | 35.00               |
| Malleable scrap .....             | 25.00               |
| Car wheels, iron .....            | 30.00               |
| Steel axles .....                 | 25.00               |
| Stove plate .....                 | 30.00               |
| No. 1 wrought scrap .....         | 20.00               |
| Plate and shape shearings .....   | 21.00               |
| Heavy breakable cast .....        | 20.00               |

# Machinery Markets and News of the Works

## SLIGHTLY MORE INQUIRY

### Sales Are Chiefly of Single Machines, Out of Stock, with Prompt Delivery

#### Export Business a Little Better—Evidence of Deferred Buying Still Apparent

A little more activity as to inquiry is the main feature of an otherwise uninteresting market. The chief sales have been of single machines, usually out of stock and with prompt delivery. Reports are still current of deferred buying because of unsettled industrial and financial conditions, among which cases is that of the proposed plant for making motor car axles in the Cincinnati district, which would require about \$60,000 worth of tools.

The export situation is better. Sales of plateworking machines have been made to Japan and of frog and switch planers for a Chinese railroad. The E. W. Bliss Co., Brooklyn, is asking for 15 tools for shipment to Birmingham, England.

## New York

NEW YORK, July 6.

The past week has not produced much new business in machine tools, but there are a few more inquiries. On the whole, however, business is very quiet. Some sellers in New York did not receive a single inquiry during the week. Interest centers largely in prospective railroad purchases. The Norfolk & Western is expected to send out formal orders this week on its recent list, which called for about 70 machines. The New York Central has prepared a list of its requirements, but its issuance is being held up pending appropriation of funds. Meanwhile, this road will probably buy a few tools covering urgent requirements. The Delaware, Lackawanna & Western has bought a 90-in. driving wheel lathe and a wheel press. The Seaboard Air Line is expected to buy soon. Purchases will probably be made at its Birmingham, Ala., offices.

The General Electric Co. continues to buy, and is now receiving quotations on about 20 metal-working and wood-working machines for its Baltimore plant. The metal-working tools are as follows. One toggle press, equivalent to No. 1½ Bliss; one No. 21 press, flywheel type, similar to No. 20 Bliss; one screw closter, equivalent of Acme; three nailing machines, No. 16-36, equivalent of Morgan open back; one rotary patent bevel square end circular shear, equivalent of No. 2 Waugh; one power squaring shear, similar to No. 52 Niagara; one four-spindle sensitive drill; one horizontal tapping machine, equivalent to Hubbell ½ in.

The Willys Corporation, Elizabeth, N. J., has placed further orders to round out the equipment which has been bought during the past six months for its new automobile manufacturing plant. The Wasson Piston Ring Co., Plainfield, N. J., is also buying a few tools. The Edison Lamp Works, Harrison, N. J., has bought a few tools.

Export inquiry and buying is slightly improved. Recent sales include several plateworking machines to a Japanese shipbuilding company and three frog and switch planers, 42 in., for shipment to a railroad in China. The E. W. Bliss Co., Brooklyn, has issued an inquiry for about 15 tools, including planers, slotters and engine lathes, for shipment to Birmingham, England.

Dullness continues in the crane market, particularly in electric overhead cranes. There is a fair inquiry for locomotive and hand power cranes, but a noticeable slackening in orders. Exporters to South America, Cuba and Europe have issued inquiries. The Union Pacific Railroad has removed its purchasing department from New York to Omaha, Neb. Among current inquiries is one from the Coopra Co., 154 Nassau Street, New York, for a 25-ton and a 30-ton overhead traveling crane for export to Rotterdam. The Standard Oil Co. is in the market for a 2-ton hand power crane for Charleston, S. C.

Among recent sales are: The Milwaukee Crane & Engi-

Both the Chesapeake & Ohio and the Norfolk & Western railroads are buying against their recent large lists. The list of the New York Central is held up pending an appropriation, but this railroad is covering urgent requirements. The Seaboard Air Line is expected to buy soon through its offices at Birmingham, Ala. The Santa Fe has just issued a list, to be followed by more. The Boston and Maine has out a small list.

The General Electric Co. is receiving quotations on 20 metal and wood-working machines for its Baltimore plant. The Globe-Wernicke Co. is in the market for several punch presses.

It is reported from Pittsburgh that there is a more active demand for electrical equipment in the smaller lines. From Cleveland it is said that carload shipments of tools from manufacturers are coming through with fair promptness, but that the railroads are slow in accepting outgoing shipments in less than carload lots. Chicago reports that the shipping situation is worse. From Cincinnati it is reported that there are several crane inquiries, particularly from Kentucky.

neering Co., a 15-ton, 75-ft. span, 4-motor overhead traveling crane to the Harris Structural Steel Co., 1480 Broadway, New York; Alfred Box & Co., a 35-ton, 3-motor overhead traveling crane to the Brooklyn Edison Co., Brooklyn, N. Y.; the Shepard Electric Crane & Hoist Co., a 3½-ton single I-beam crane to the Minneapolis Threshing Machine Co., Hopkins, Minn.; the Chisholm-Moore Mfg. Co., a 5-ton, 27-ft. span hand power crane to the Rockaway Rolling Mills, Rockaway, N. J.; the Rooper Crane & Hoist Works, a 2-ton, 12-ft. span hand power crane to Cornell & Underhill, New York, and a 1-ton, 19-ft. span hand power crane to the Navy Yard, Charleston, S. C.

The Middletown Rubber Co., 280 Broadway, New York, manufacturer of automobile tires, will call for bids soon for its new three-story plant in the McCardell district, Middletown, N. Y. With machinery it is estimated to cost about \$1,000,000.

The Steel Wheel Corporation, New York, has been incorporated with a capital of \$350,000 by M. Buchter, M. L. Crames and L. Orleans, 130 West 113th Street, to manufacture automobile wheels and similar products.

The Duriron Castings Co., 90 West Street, New York, manufacturer of acid and rust-proof iron products, etc., has increased its capital to \$600,000.

The General Electric Co., Schenectady, N. Y., has had plans prepared for the erection of a one-story brick building, 35 x 218 ft., on Grand Street, near Garrison Avenue, Maspeth, L. I., to cost about \$18,000.

The Hindman Body Corporation, New York, has been incorporated with a capital of \$65,000 by C. A. Hindman, R. Barnhart and G. A. Logan, 141 Broadway, to manufacture automobile bodies.

The Ajax Fastener Co., 145 West Twenty-eighth Street, New York, is planning for the installation of new equipment at its plant, including power presses.

A one-story compressor plant to cost about \$25,000 will be erected by Stephen Ransom, Inc., 401 West Street, New York, operating a marine repair plant, in connection with its new machine shop and repair works at 518 Hamilton Street, Brooklyn.

H. S. Fitzgibbon & Co., Inc., Sea Cliff, L. I., has been incorporated with a capital of \$300,000 by R. N. Phinney, R. W. Crawford and H. Schubert, 120 Broadway, New York, to manufacture power plant specialties.

The Bally Electrical Supply Co., New York, has been incorporated with a capital of \$250,000 by H. Hammersly and L. D. Bally, 1025 East Sixteenth Street, Brooklyn, to manufacture electrical equipment.

The Overman Cushion Tire Co., 250 West Fifty-fourth Street, New York, manufacturer of automobile tires, has increased its capital stock from \$550,000 to \$900,000.

The Auto Motive Appliances Association, New York, has been incorporated with an active capital of \$51,000 by S. L.

Fish, J. A. Dix and F. J. Tietort, 11 Broadway, to manufacture automobile equipment.

The Walter Motor Truck Co., 110 West End Avenue, New York, manufacturer of automobile trucks, with plant at Southampton, L. I., has increased its capital from \$100,000 to \$1,000,000.

The Rector Carburetor Co., New York, has been incorporated with an active capital of \$215,000 by G. C. Delacey, F. G. Haag and J. F. Alien, 11 Broadway, to manufacture ignition equipment.

The American Numbering Machine Co., 224 Shephard Avenue, Brooklyn, manufacturer of calculating machines, parts, etc., has been reorganized with active capital of \$205,000. Construction has begun on a two-story addition, 50 x 100 ft., to cost about \$40,000.

George R. Meneely & Son, Watervliet, N. Y., manufacturers of bells, etc., have increased their capital from \$35,000 to \$150,000.

The Vesta Storage Battery Co., 1696 Broadway, New York, manufacturer of storage batteries, has leased for 21 years the two buildings at 47-49 West Sixty-third Street, on lot 50 x 100 ft., for new works.

Borough officials of Carmel and Kent, Putnam County, N. Y., have granted a franchise to Ellsworth Fowler, Carmel, for the erection of an electric power plant. A company will be organized, with Mr. Fowler as head.

The Reed Wire Specialties Corporation, New York, has been incorporated with a capital of \$500,000 by H. G. and A. Oliver, and C. A. Davidson, Mamaroneck, N. Y., to manufacture wire products.

The Aetna Tire & Rubber Co., Brooklyn, has been incorporated with a capital of \$300,000 by F. W. Hallam, O. C. Meyer and F. Trautwein, Jr., 587 Manhattan Avenue, to manufacture automobile tires and other rubber products.

The Nicholas Power Co., 90 Gold Street, New York, manufacturer of motion picture machines, parts, etc., is planning for the installation of new machinery.

J. H. Bunnell & Co., 32 Park Place, New York, manufacturer of electrical specialties, has increased its capital from \$150,000 to \$300,000.

Fire, June 27, destroyed a portion of the mill and machinery of the Phoenix Paper Co., Battenville, N. Y., with loss estimated at \$150,000.

The Independent Talking Machine Co., New York, has been incorporated with a capital of \$1,000,000 by S. Hechler, R. Kanarek and C. M. Brouse, 240 Riverside Drive, to manufacture talking machines and parts.

The United States Metal Frame Co., New York, has purchased a five-story shop building, 50 x 100 ft., at 56-58 Lewis Street, for the establishment of a new plant.

The Columbia Graphophone Co., 233 Broadway, New York, has started work on the foundations for its new plant at Orangeville, Baltimore, for the manufacture of talking machines, parts, motors, etc. It will be six stories, 220 x 380 ft., and is estimated to cost in excess of \$2,500,000 with other buildings and equipment.

The Broadway Auto Radiator & Electro Plating Co., New York, has been incorporated with a capital of \$15,000 by W. Glickman and E. Williams, 130 Fulton Street, to manufacture automobile radiators and other sheet metal products.

The General Phonograph Corporation, 25 West Forty-fifth Street, New York, manufacturer of talking machines and parts, spring motors, etc., with plant at Newark, N. J., has increased its capital stock to \$4,000,000.

The B. & P. Carburetor Co., Brooklyn, has been incorporated with a capital of \$100,000 by T. I. C. Dunn, T. Moores and A. S. Bergen, 348 Jefferson Avenue, to manufacture carburetors and ignition equipment.

The Endurance Tire & Rubber Corporation, 44 Whitehall Street, New York, manufacturer of automobile tires, has filed notice of dissolution.

The Coil Spring Co., 242 Canal Street, New York, manufacturer of steel springs, etc., has increased its capital to \$20,000.

The Carteret Oil & Refining Co., Carteret, N. J., has awarded a contract to the American Concrete Steel Co., 27 Clinton Street, Newark, for a one-story addition to its refinery, 100 x 260 ft., to cost about \$175,000. It is also planning for the erection of other buildings. The company has recently increased its capital from \$500,000 to \$1,000,000.

The Four-Minute Washing Machine Co., Elizabeth, N. J., has been incorporated with a capital of \$10,000 by F. H. Walters, E. J. Flynn and F. R. Walters, to manufacture mechanical washing equipment.

The former Government shell plant at Gibbstown, N. J., is being dismantled by the Chesapeake Salvage Co. and the works have been closed. At the loading plant, Woodbury, operations are being curtailed and it is said that entire

discontinuance has been planned for an early date, at which time the plant will be turned back to the owners, the Campbell Soup Co., Camden, N. J.

The Bureau of Yards and Docks, Washington, D. C., has awarded a contract to the Hughes Foulkrod Co., Commonwealth Building, Philadelphia, Pa., for the erection of the new naval aircraft plant at Lakehurst, N. J., including shops, power plant, distributing system, etc., at a cost of \$525,000.

The Power Auto Machinery Co., Jersey City, N. J., has been incorporated with a capital of \$25,000 by Edwin C. Randall, Daniel J. Dowling and Clarence S. Ashley, to manufacture automobile parts and other equipment.

The American Tank & Welding Co., 55 Isaac Street, Belleville, N. J., has been organized to manufacture tanks and similar products. George C. Lee heads the company.

The Lehigh Valley Railroad Co., Jersey City, N. J., has filed plans for bulkhead work at the foot of Chapel Avenue to cost about \$150,000, in connection with its proposed new freight terminal estimated to cost in excess of \$1,000,000. Hoisting, conveying and freight handling machinery will be installed.

The Endurance Battery Corporation, Plainfield, N. J., has been incorporated in Delaware with capital of \$10,000,000 by Jesse B. Perlman, Roland H. Guinzburg, Flushing, L. I.; and Martin E. Goldman, Plainfield, to manufacture electric storage batteries.

A one-story power plant to cost about \$50,000 will be erected by the Osborne Co., Newark, N. J., at its lithographing plant at 759 Summer Avenue. Plans are being prepared by W. A. Bishop and H. D. Scudder, 9 Clinton Street, engineers. The installation will include two 150-hp. boilers with auxiliary equipment.

The Strain & Gentile Co., Newark, has been incorporated with a capital of \$125,000 by William C. Strain, Jr., and Robert F. Gentile, to manufacture motorcycles, bicycles and parts.

Kohn & Co., 26 Camp Street, Newark, manufacturing jewelers, are taking bids for a two-story and basement plant at 308-12 Mulberry Street, to cost about \$20,000, exclusive of equipment.

The Consolidated Machinery Exchange, Newark, N. J., has been incorporated with a capital of \$125,000 by Samuel Rosen and Samuel Johnson, 201 Mulberry Street.

The Victor Rite-Lite Co., Montclair, N. J., has been incorporated for \$125,000 and has bought the business of the Standley Non-Skid Chain Co. While the distribution of the Standley products has been taken over, the company will not manufacture chains, but will make the Victor Rite-Lite, a movable light for automobiles. As the entire output of the plant has been sold for six months, it is re-capitalizing for \$3,000,000 and will erect its own foundry, machine shop, etc., plans for which are being considered. The officers are: H. S. Hill, president; Benjamin Rotman, vice-president; George W. J. Crabb, treasurer, and E. J. Rennie, secretary.

## New England

BOSTON, July 5.

A further decrease in machine tool buying is noted in this market. Business the past week has by no means been at a standstill, however, and there are enough prospective orders to insure some activity in the next two weeks. Total June sales, compared with those for April and May, make a rather poor showing, but against those for June in years prior to the war they compare favorably. Prices are steady, but concessions have been named where competition for business was keen. Deliveries from the West have been materially checked by railroad embargoes. Aside from actual transactions, the establishment of permanent offices of the combined companies of the Reed-Prentice Co., Whitcomb-Baldessell Machine Tool Co., Worcester, and the Becker Milling Machine Co., Hyde Park, Boston, at 53 Franklin Street, is the most interesting topic in local machine tool circles.

The Boston & Maine Railroad has a list out for its Concord, N. H., shops which includes one 90-in. driving wheel lathe, 6-ft. radial drill, 3-in. pipe machine, 2-in. bolt cutter, 18-in. lathe, 24-in. crank shaper, and one 200-ton hoisting jack. The Boston & Albany has not yet bought its 28-in. shaper. The Boston & Maine list, although small, is encouraging and taken as an indication of further purchases by New England carriers. The Draper Corporation, Hopedale, Mass., has abandoned its long list of radial drills, lathes, etc. The General Electric Co. remains out of the market, owing largely to labor difficulties at its West Lynn, Mass., plant and its inability to secure raw materials. H. E. Paine, formerly general manager, Butterfield & Co., Inc., Derby Line, Vt., has been made vice-president and general

manager Vermont Tap & Die Corporation, Newport, Vt., and has been making inquiries in the local market regarding new equipment. He is temporarily located at 70 Granite Street, East Milton, Mass.

The Amoskeag Mfg. Co., Manchester, N. H., and Boston, continues to buy against its list, having contracted, among other things, for two turret lathes, one screw machine and four speed lathes. With the exception of a 36-in. lathe the list is practically completed. A Springfield, Mass., plant has bought five Flather lathes, and the Crofoot Gear Works, Cambridge, Mass., six small lathes for its new Hyde Park plant and is interested in gear cutting machinery. The Bethlehem Shipbuilding Corporation, Ltd., has bought a number of tools to be placed in the new general shop at its Fore River Works. The Saco-Lowell Works, Boston, has taken two planers, and the Blake & Knowles Works, Waltham, Pump & Machinery Corporation, Cambridge, Mass., a 10-in. pipe machine. The Federal Board of Vocational Training, Boston, bought a milling machine, but its appropriation was not sufficient to include the grinder wanted. Considerable business has been placed with Norfolk Downs, Quincy, Mass., plants. The Boston Gear Works purchased a drill and other equipment, the Pneumatic Scale Corporation, Ltd., several light production tools, and the Vedoe Peterson Co., grinders and additional tools. The latter company expects to move this week from its temporary quarters to its new plant. A Lowell, Mass., concern bought a second hand 36-in. x 14-ft. Niles lathe.

The Bancroft & Martin Rolling Mills Co., South Portland, Me., bought a 15-ton locomotive, 8-wheel crane, Brown hoist, and a Massachusetts street railroad company a 12-ton, 51-ft. span crane. The C. B. Roberts Engineering Co., Boston, has purchased for the New England Oil Corporation, Fall River, Mass., four 1-ton, 13-ft. span, hand cranes. Gray Foundries, Inc., Poultney, Vt., is negotiating for crane equipment and runways.

The Carr Fastener Co., Cambridge, Mass., will occupy the part of its plant now used by the Crofoot Gear Works, when the latter company is installed in its new Hyde Park plant. During the war the Carr Fastener Co. filled about \$1,500,000 Government contracts, reorganized its production layout and built up an effective sales department. It is about to start operations at its new Canadian plant under the name of the Carr Fastener Co. of Canada, Ltd., Hamilton, Ont. Its works manager is at Birmingham, England, supervising the installation of equipment in a new plant to be opened there.

The New England Welding Co., Boston, recently incorporated, will locate in Worcester, Mass., and specialize in heavy steel and cast iron sections, using the Thermit welding system. The company is a subsidiary of the Thomson Electric Welding Co., Lynn, Mass.

The Velco Mfg. Co., Inc., Greenfield, has taken a Massachusetts charter to manufacture broaches, broaching machines, tools, equipment and supplies. Frank O. Wells, Greenfield, is president, and J. Tennyson Seller, vice-president and treasurer. The board of directors include David B. Miller, Greenfield, Walter H. McCarthy, West Springfield, and J. Howard Jones, Springfield. The company has a capitalization of 16,000 shares common stock, no par value, of which 7000 are issued, and 500 shares preferred stock, par \$100, 200 of which are issued.

The Landry Loom Co., Lowell, Mass., capitalized for \$50,000, has been incorporated to manufacture looms with a patented devised head motion and contemplates securing manufacturing quarters at an early date. Avila Desiosiers is president; Edward J. Bernier, vice-president, and Adolphus H. Landry, 46 Arken Avenue, Lowell, is treasurer and manager.

A certificate of dissolution has been filed by the Pequot Brass Foundry, Inc., Norwich, Conn.

Work will soon start on the 75 x 100 ft. foundry to be erected at Fort Neck by the United States Electric Co., New London, Conn.

A certificate of dissolution has been filed by the Bassick Machinery Co., Bridgeport, Conn., dies and machinery.

Contract has been awarded by the Hughes Eyelet Co., Taunton, Mass., for a one-story addition, 30 x 115 ft.

The Cave Welding & Mfg. Co., Bridgeport, Conn., has let contract for a one-story addition, 40 x 90 ft., on Center Street.

Preliminary plans have been drawn for a one and two-story plant for the Ford's Wawbeek Springs, Inc., at Suffield, Conn.

The Hampton Brass Co., Springfield, Mass., has increased its capitalization \$20,000. Andrew J. Tucker is president and Alfred D. Scott treasurer.

The Elm City Brass & Rivet Co., Plainville, Conn., has filed a preliminary certificate of dissolution. All claims should be sent to A. H. Condell, Plainville.

The Hendey Machine Co., Torrington, Conn., recently increased its capitalization from \$1,200,000 to \$1,600,000.

Plans for an addition to the manufacturing plant of the Portsmouth Auto Body Co., Portsmouth, N. H., have been revised. T. J. Boyan is manager.

Contractors are figuring on a new junior high school to be erected by the city of New London, Conn., which will contain a metal-working department.

Plans are being drawn for a \$1,000,000 high school at Quincy, Mass. Industrial and manual training departments are included in the plans.

The New England Westinghouse Co., Springfield, Mass., contemplates the erection of a four-story machine shop estimated to cost \$200,000.

Work has begun on a two-story, 95 x 269 ft. garage and service station to cost approximately \$200,000 at St. Paul Street and Commonwealth Avenue, Boston. Daniel Cerrussi is the owner.

Patrick Sweeney, president and treasurer Continental Wood Screw Co., New Bedford, Mass., is arranging for an extension to the plant for the manufacture of rivets.

The Weir Stove Co., Taunton, Mass., will erect a one-story, 35 x 115 ft., brick foundry and a three-story addition, 70 x 100 ft., to its plant.

The Boston Gear Works, Norfolk Downs, Quincy, Mass., will build a one and two-story addition, 100 x 120 ft.

Contract has been let by the International Silver Co. for the construction of a one-story, 44 x 106 ft. addition to the former Florence Mfg. Co.'s plant, Florence, Mass., which will be known hereafter as factory F. An addition to the boiler plant also will be erected.

Plans have been completed by the Hartford Fire Insurance Co., Hartford, Conn., for a new power plant on Asylum Avenue to cost about \$150,000.

The Spencer Turbine Co., 484 New Park Avenue, Hartford, Conn., manufacturer of blowers, etc., has plans for a one-story addition, 60 x 125 ft., to cost \$45,000.

Elias Thomas, Pawtucket, R. I., has filed plans for a one-story brick boiler shop on Harrison Street.

The Chandler Motors Co., Providence, R. I., has commenced the erection of a new service and repair building, 88 x 100 ft., on Pearl Street.

The Pratt & Whitney Co., Hartford, Conn., manufacturer of tools, has taken bids for a one-story and basement, reinforced concrete addition, to be used for small tool work. Harris & Richards, Drexel Building, Philadelphia, Pa., are architects.

The Veeder Mfg. Co., Hartford, Conn., manufacturer of bicycle parts, cyclometers, etc., has filed plans for a one-story building on Sargeant Street.

The Bridgeport Machine Co., Beardsley Street, Bridgeport, Conn., has completed plans for a one-story machine shop, 40 x 80 ft., to cost about \$20,000.

The United States Finishing Co., Greenville, near Norwich, Conn., is having plans prepared for the erection of a new power plant at its textile works to cost about \$300,000, including boilers, etc., to replace the structure recently destroyed by fire. Day & Zimmerman, 611 Chestnut Street, Philadelphia, Pa., are the engineers.

The Kelley Tire & Rubber Co., New Haven, Conn., manufacturer of automobile tires, has increased its capital from \$1,000,000 to \$5,000,000 for expansion. Edward J. Kelley is president.

The Leighton Machine Co., Kingston Street, Manchester, N. H., has awarded a contract to L. H. Shattuck, Inc., 208 Granite Street, for a two-story addition, 45 x 170 ft., to cost about \$40,000.

## Philadelphia

PHILADELPHIA, July 5.

The General Electric Co., Schenectady, N. Y., is having plans prepared for the first unit of its new plant at Philadelphia, between Sixty-eighth and Seventieth streets. It will be six stories, of reinforced concrete, 80 x 600 ft., and is estimated to cost about \$500,000.

Fire, June 25, destroyed a portion of the plant of the Lowry Top & Body Co., Gaul and Adams streets, Philadelphia, manufacturer of automobile bodies, etc., with loss, including equipment, estimated at \$150,000.

The Crane Co., Chicago, manufacturer of valves, steam specialties, etc., is holding in abeyance temporarily the erection of its new pipe shop on Master Street, near Germantown Avenue. Plans have been prepared for a one-story building 60 x 200 ft.

The G. & H. Barnett Co., 1078 Frankford Avenue, Phila-

delphia, manufacturer of files, a subsidiary of the Nicholson File Co., Providence, R. I., will build a one-story addition.

The Rotary Engine Co., 1724 Sansom Street, Philadelphia, has filed plans for a one-story addition.

Frank B. Clayton's Sons, 1227 North Eleventh Street, Philadelphia, sheet metal works, have filed plans for a one-story addition.

The Bureau of Yards and Docks, Washington, D. C., has taken bids for a four-story brick and concrete experimental plant at the Franford Arsenal, Philadelphia, to cost about \$208,500. An appropriation for \$270,000 has also been secured for a new electric power plant.

Upon the Government relinquishment of the rifle manufacturing plant at Eddystone, near Philadelphia, June 30, the Baldwin Locomotive Works took possession of the works and operations are under way for equipping the plant for locomotive repair work. One of the first orders to be handled will be that for the Pennsylvania Railroad, covering a total of 200 engines.

The American Bridge Co., foot of Warren Street, Trenton, N. J., has filed plans for a one-story brick and steel forge shop, 78 x 200 ft., to cost \$40,000, and one-story shop, 32 x 122 ft., to cost \$15,000.

The Woven Steel Hose & Rubber Co., Dale Street, Trenton, N. J., has filed plans for a one-story boiler plant on Prospect Street.

The Ford Tire Co., Erie, Pa., manufacturer of automobile tires, is considering plans for a new plant at Burlington, N. J., to give employment to about 250. James Whitton heads the company and Jacob Ellis, Burlington, is interested in the project.

The Lycoming Rubber Co., Lycoming, Pa., is taking bids for two new buildings, brick and steel, each about 60 x 100 ft.

The Boyertown Electrical Supply Co., Boyertown, Pa., has been organized to manufacture electrical equipment. E. M. Yoder, Boyertown, and Charles G. McAvoy, Philadelphia, head the company.

Fire, June 22, destroyed the interior of the machine shop of Frank Tinker & Son Co., Lawrenceville, Pa., with loss estimated at about \$16,000, including equipment.

The Standard Powder Co., Hollidaysburg, Pa., will make enlargements and improvements in its plant to cost in excess of \$750,000.

Fire, June 28, caused by an explosion, destroyed a large portion of the plant of Vulc weld Tire & Rubber Co., Pottstown, Pa., with loss estimated at \$35,000. William C. Walsh, president and general manager, and James A. Maney, general superintendent, lost their lives in the disaster.

The Hudson Coal Co., Scranton, Pa., is planning for the erection of a new coal breaker at its Marvine Colliery.

## Chicago

CHICAGO, July 5.

There is little activity in the market and such business as is being done consists of sales of individual tools. Further railroad orders, however, are looked for. The Rock Island list is expected to be closed at any time and the Santa Fe has issued a small inquiry which is expected to be followed by others from time to time. Before the close of the year it is felt that railroad purchases in good volume will develop, and in this connection the labor situation has a bearing. In the past railroads have consistently followed the policy of conserving their machine tool equipment by distributing the older and lighter tools replaced in their main shops among the smaller outlying shops. Railroad mechanical officers are coming to the conclusion, however, that this policy is not economical. With labor more inclined to soldier on the job than ever before, light and out-of-date tools are conducive to unsatisfactory work. By generally introducing new heavy production equipment they hope to reduce the time lost through the use of inadequate equipment and take away from the workman the excuse that he lacks proper facilities for obtaining output.

The Santa Fe list, just issued, follows:

One 14-in. x 6-ft. motor-driven portable bolt lathe.

One 36-in. x 36-in. x 6-ft. horizontal motor-driven milling machine.

One 4½-in. x 8-ft. motor-driven locomotive cylinder boring bar.

One 20-in. x 10-ft. engine lathe, belt drive with counter-shaft.

One No. 3 Acme, or equivalent, flat turret lathe, belt drive.

One nut facing machine, capacity ¼-in. to 1½-in., belt drive.

One belt-driven self-feeding knife grinder, length 36-in.

One other list, issued by the Chicago Board of Education, is before the trade. It calls for twelve 13-in. x 6-ft. engine lathes, one shaper, one grinder and one 2-spindle drill, sealed bids on which are to be submitted to-day. The equipment is for the Tilden technical high school.

The transportation situation, which has been unsatisfactory for three months, has taken a turn for the worse. In the Chicago switching district no shipments are accepted without a special permit, this restriction having been imposed to enable the belt lines to reduce the large accumulations of freight now congesting their rails. Railroad service generally is also growing worse rather than better. Shipments are moving slowly and those coming considerable distances often arrive in damaged condition, indicating that freight is handled much more carelessly than formerly.

The financial situation in this district is still strained, but seems to be sound and stable, as little is heard of failures. One automobile manufacturer, however, is reported to have applied for a receivership, but this development is not regarded as having any general significance, but is believed to be due to purely local conditions.

Machine tool prices show few changes, but those which are occurring are uniformly upward. A manufacturer of turret lathes who recently announced a general advance on his products, has made a second advance of five per cent on part of his line. Two manufacturers of planers have raised prices about 10 per cent.

June was probably the least satisfactory month from a sales standpoint of any so far this year, but one or two dealers claim to have done a little better than in May. Although business has slowed up, the market is not inactive. According to estimates by sellers, current orders total from 40 to 70 per cent of the average bookings during the first three months of the year.

A territory similar to the Chicago Central Manufacturing District has been laid out between Morgan Street and Ashland Avenue, extending North of West 119th Street, and has been given the name of the West Pullman Manufacturing District. Adjacent to the tract are the Plano works of the International Harvester Co., the Chicago Malleable Castings Co., Whitman & Barnes Mfg. Co., Carter White Lead Co., McCord Co., and other leading industries. The Chicago, West Pullman & Southern Railroad has been granted a permit to extend its rails into the new district and from it direct connection will be had with about 11 other railroads. Residences will be entirely excluded from the district and building lines and a high standard of building construction will be maintained. The first sale in the district was an 8-acre site to the Great Lakes Forge Co., which already has a large plant in course of construction, as previously noted in this column.

Victor F. Bendixen, 2300 Bloomingdale Avenue, Chicago, has let contract for a one-story foundry addition, 68 x 72 ft., to cost \$8,000.

The International Harvester Co., 606 South Michigan Avenue, Chicago, will construct a three-story factory addition, 31 x 65 ft., at Clybourn Street and Diversey Avenue, to cost \$6,000.

The Western Electric Co., Forty-eighth Avenue and Twenty-fourth Street, Chicago, has completed plans for a one-story structure, 160 x 180 ft., to cost \$250,000.

The Great Western Smelting & Refining Co., 600 West Forty-first Street, Chicago, has purchased a tract at the northeast corner of West Fifty-first Street and South Union Avenue, where it plans to construct a \$1,200,000 smelter. The company has other plants at Hammond, Ind., Seattle, St. Louis, San Francisco and Rio Janiero.

The Stewart-Warner Speedometer Co., 1823 Diversey Parkway, Chicago, will erect a six-story plant, to cost \$350,000.

The plant of the Chicago Foundry Co., 2021 North Major Street, Chicago, was recently damaged by fire.

The Baker-Galva Co., Galva, Ill., recently incorporated for the manufacture of tractors, has secured options on land and is having plans prepared for a manufacturing building.

The Gartland foundry, Danville, Ill., now under construction, will be ready to begin operations with a force of 100 about Aug. 1.

The Meadows Mfg. Co., manufacturer of grain elevators, tractors, washing machines and various farm implements, is moving from its plant at Meadows, Ill., to larger quarters at Bloomington.

The Hurst Airplane Co., Evansville, Ind., will erect a plant comprising three units, each 50 x 200 ft., to cost \$40,000. Airplanes will be manufactured.

The W. J. Reese Brass Foundry Co., will erect a foundry at Third and Palean streets, Keokuk, Iowa, to cost \$10,000.

The Altenburg Tire & Equipment Co., Davenport, Iowa, will erect a foundry and machine shop to cost \$25,000.

O. R. and W. E. Allerton, the Allerton Pattern Works, Benton Harbor, Mich., have formed a new company and taken over property in Wayne Street, Niles, Mich., now improved with a one-story brick factory, 60 x 100 ft. A gray iron foundry and pattern works will be installed.

The Superior Foundry, Holland, Mich., has been purchased by the Western Foundry Co., Chicago, which expects to start operations shortly with a doubled force.

The Illinois Metal Process Co., 123 West Madison Street, Chicago, has let contracts for a two-story manufacturing plant and machine shop, 125 x 550 ft., at 4606-58 Arthington Street.

The D. O. James Mfg. Co., manufacturer of gears, 1120 West Monroe Street, Chicago, has let contract for a one-story addition, 18 x 60 ft., to cost \$15,000.

The Ajax Forge Co., 2503 Blue Island Avenue, Chicago, has let a contract for the construction of a plant to cost \$300,000.

In conjunction with its plans to construct a plant to cost \$1,000,000 to \$2,000,000, the American Car & Foundry Co., has acquired additional land adjoining its present holdings on the South branch of the Chicago River, Chicago. On the northeast corner of Paulina Street and the river it has secured a site, 240 x 1185 ft., and on the west side of Paulina, south of Blue Island Avenue, a tract, 333 x 1012 ft. Last April the company purchased the northeast corner of Wood Street and the river and land occupied by the Armstrong Paint & Varnish Co.

The Elgin National Watch Co., 10 Wabash Avenue, Chicago, has awarded all miscellaneous contracts for a complete new plant in the vicinity of its present works at Elgin, Ill., estimated to cost with equipment, about \$1,000,000. Charles H. Hulburt is president.

Fire, June 24, caused by an explosion, destroyed a portion of the plant of the Western Cartridge Co., Springfield, Ill., with loss unestimated.

The Diamond T Motor Car Co., 4519 West Twenty-sixth Street, Chicago, has filed plans for a new plant at 4525-33 West Twenty-sixth Street, to cost \$180,000.

The Curtis Aeroplane & Motor Corporation, Waukegan, Ill., is arranging for the installation of machine tools and general machine shop equipment.

The Board of Education, Coleraine, Minn., has had plans prepared for a two-story high school, to include machine shop, wood-working shop, electrical department and other sections, estimated to cost \$350,000. W. T. Bray, Torrey Building, Duluth, Minn., is architect.

The Oil Products Appliance Co., Third Avenue, Maywood, Ill., has completed plans for the erection of a new one-story machine shop, 50 x 135 ft., to cost about \$15,000.

A complete power plant will be installed in the new plant to be erected at 2125-37 West Madison Street, Chicago, by the Great Western Laundry Co., 2319 West Madison Street. It will be three-stories, 155 x 170 ft., and is estimated to cost \$450,000. Bids for erection are being taken.

## Buffalo

BUFFALO, July 5.

The Eberhardt Steel Products Co., 41 Perry Street, Buffalo, has awarded contract to the Tifft Construction Co., Iroquois Building, for a one-story plant to cost about \$90,000, comprising a machine shop, general metal-working department and offices. C. Eberhardt, Jr., is head.

The International Time Recording Co., Endicott, N. Y., has construction under way on three additions forming new factory buildings Nos. 17, 18 and 19. An extension will also be erected to the power plant. The work is estimated to cost about \$450,000.

The United States Hame Co., 135 Tonawanda Street, Buffalo, manufacturer of hames, etc., has awarded a contract to Thomas H. Ryan, 184 Cleveland Avenue, for extensions and improvements to cost about \$15,000.

The Brace Hardware Co., Jordan, Onondaga County, N. Y., has been incorporated with an active capital of \$75,000 by D. E., R. P. and E. Brace, to manufacture hardware and metal products.

E. C. Stearns & Co., Inc., 100 Oneida Street, Syracuse, N. Y., manufacturer of gray iron castings, hardware, etc., has filed notice of reorganization with active capital of \$150,000.

The Requa Electrical Supply Co., 95 St. Paul Street, Rochester, N. Y., manufacturer of electrical products, has increased its capital from \$25,000 to \$50,000.

J. H. Williams & Co., Vulcan Street, Buffalo, manufacturer of drop forgings, wrenches, etc., has awarded a contract to Stone & Webster, 147 Milk Street, Boston, for a two-story addition, 40 x 50 ft.

The Polish-American Foundry Co., Buffalo, manufacturer of iron and steel castings, etc., has increased its capital from \$50,000 to \$200,000.

The General Electric Co., East Lake Road, Erie, Pa., has awarded a contract to the Hughes Foulkrod Co., Oliver Building, Pittsburgh, for its new one-story machine shop, 148 x 900 ft.

McKaig-Hatch, Inc., 1584 Niagara Street, Buffalo, manufacturer of iron and steel products, has awarded contract to T. H. Ryan, 184 Cleveland Avenue, for a one-story hammer shop, general iron works and office, estimated to cost about \$100,000. A. McKaig is president.

The Canaseraga Electric Co., Canaseraga, N. Y., has been incorporated with a capital of \$35,000 by F. Dolleph, J. G. Craig and O. I. Shay, Canaseraga, to manufacture electrical products.

The Aerial Transport Co., Euclid Avenue, Elmira, N. Y., is having plans prepared for a one-story aeroplane hangar and service works, 125 x 125 ft. A. W. Harris is head.

## Detroit

DETROIT, July 5.

Bulliness continues in the local machine tool market, very few orders having been booked the past week, owing to the financial situation, it is said, more than to any other factor. An attitude of optimism is observable, however, as to future business, and dealers look for a resumption of good business within a few weeks.

Among the changes made in the plants of the Motor Wheel Corporation, Detroit, is that in the metal-working department of the Auto Wheel Co., where the complete machining of hubs for motor car wheels will be done. Considerable additional machinery is to be installed and 50 more machinists will be employed.

The Superior Machine & Engineering Co., Detroit, has contracted for the erection of a two-story and basement plant, 100 x 120 ft., at Larned Street and St. Aubin Avenue.

A plant to cost \$175,000, in addition to its present factory at Milford, Mich., is being planned by the Detroit Auto Sash Co. It intends to move its Detroit works to Milford, where homes will be erected for the employees.

The Homer Furnace Co., Coldwater, Mich., has been compelled to curtail operations, owing to lack of transportation facilities. The plant is operating only three days a week, and the warehouses are filled with furnaces awaiting shipment.

Work on the \$3,000,000 addition to the Oakland Motor Car Co.'s plant at Pontiac, Mich., was started last week, simultaneously with the erection of steel structural work at the plant of the General Motors Truck Co., where production facilities are to be doubled this summer. Both concerns are General Motors Corporation subsidiaries.

The Mount Clemens Truck Body Co., Mount Clemens, Mich., has increased its capital stock from \$30,000 to \$50,000.

The Imperial Welding Co. of Detroit has increased its capitalization from \$15,000 to \$30,000.

The Ervin Foundry & Machine Co., Adrian, Mich., has taken a three year lease on 11,000 sq. ft. of additional floor space in the building of which it has occupied a part. The working force will be increased.

C. F. Drozeski, D. A. Drozeski and F. T. Kennery of the Saginaw Malleable Iron Co., Saginaw, Mich., have purchased the plant in Chicago formerly known as the Franklin Park Foundry Co. and will operate it as the Central Malleable Castings Co. The plant will be ready for production by Aug. 1.

The Oliver Machinery Co., Grand Rapids, Mich., is planning the construction of an addition to its foundry at a cost of \$50,000.

The Handley-Knight Co. has been incorporated to manufacture motor cars in a plant that is now being erected in Kalamazoo, Mich.

The Landian Foundry Co., South Haven, Mich., has purchased a site for a plant.

The American Machine Products Co., Detroit, has increased its capitalization from \$40,000 to \$500,000.

The Utility Compressor Co., Detroit, has increased its capitalization from \$200,000 to \$500,000.

The Fletcher Machine Co., 547 McDougal Street, Detroit, is planning to purchase a number of machine tools, as well as general machine shop equipment.

The Detroit Structural Steel Co., Chamber of Commerce Building, Detroit, has construction under way on a new one-story fabricating works, 100 x 125 ft., on Newbern Avenue, to cost about \$100,000.

The T. C. C. Spring Co., Kalamazoo, Mich., has been incorporated in Delaware with a capital of \$2,000,000 by Judson C. Slary, Christian Girl and Charles Getter, Kalamazoo, to manufacture springs for automobile and other service, buffers, and steel automobile parts. Mr. Girl has been prominently connected with the Standard Parts Co., Cleveland.

The Federal Motor Truck Co., Federal Avenue, Detroit, is having plans prepared for its proposed new one-story plant, estimated to cost with equipment, about \$200,000. E. J. Winter, Dime Bank Building, is architect.

The Ewing Bolt & Screw Co., Farwell Building, Detroit, has completed plans for the erection of a new factory, 50 x 240 ft., to cost about \$250,000, including equipment.

The Vulcan Axle Co., Beecher Avenue, Detroit, manufacturer of automobile axles, is planning for the installation of new equipment in its machine department.

## Pittsburgh

PITTSBURGH, July 6

The market in cranes and other heavy equipment remains extremely quiet, although a fair number of inquiries are coming out. The Milwaukee Electric Crane & Mfg. Co. has taken two 10-ton, 47-ft. span, overhead cranes for the Ideal Electric & Mfg. Co., Mansfield, Ohio, and the Union Switch & Signal Co., Swissvale, Pa., has placed an order for five foundry hoists with the Roeper Crane & Hoist Works, Reading, Pa., through the Pittsburgh office of that company. The Milwaukee Electric Crane & Mfg. Co. also has been awarded a 10-ton, 67-ft. span, overhead and a 7½-ton, 38-ft., overhead for the Koppel Industrial Crane & Equipment Co., Koppel, Pa. The disposition of a number of buyers is to defer the placing of crane orders until the industrial and financial situation is clearer.

Considerable activity marks the demand for stock deliveries of machine tools and sales of lathes, drills, planers, and shapers are being made, in many cases to buyers who had orders in with manufacturers and were unable to secure delivery on account of the railroad transportation situation. There is also an active demand for electrical equipment in smaller lines, where early delivery can be made, but on the larger lines business is extremely slow. The Basic Products Co. recently placed an order with the Allis-Chalmers Mfg. Co., Milwaukee, for two ball peen mills with electric drive, for its plant at Kenova, Ohio. The Union Spring Co., New Kensington, Pa., is in the market for a couple of monorail hoists, while Corning & Co., engineers, Albany, N. Y., are taking bids on two small merchant mills for shipment to Brazil.

The Highland Automobile Co., Pittsburgh, is having plans prepared for a two-story service and repair building at Liberty and Center avenues, Shadyside, 198 x 275 ft., estimated to cost about \$400,000, including site, for which a consideration of \$85,000 was given.

Morris Walsh & Sons, Pittsburgh, have acquired the former factory of the Macbeth-Evans Glass Co., South Eighth and Sarah streets, for an addition to their cooperative works. It will be equipped for barrel manufacture and metal band work, with mechanical drying department. It is planned to begin operations in August.

The Rasner & Dinger Co., Second Avenue and Perry Street, Pittsburgh, manufacturer of sheet metal specialties, roofing, etc., has acquired a three-story building at 840 West North Avenue, for a new plant. It will be remodeled and considerable equipment installed.

The Pittsburgh Steel Tube Co., Beaver, Pa., has been incorporated with a capital of \$150,000 to manufacture steel tubing and similar products. Isaac Levin, Pittsburgh, is treasurer.

The Twin Valley Motor Co., 216 Dibert Street, Johnstown, Pa., has completed plans for a two-story service and repair works, 66 x 150 ft., to cost \$80,000.

The Nellis Coal Co., St. Albans, W. Va., operating in the Coal River field, Boone County, is planning for a new steel tipple and other equipment to cost about \$250,000.

The Fulton Tool Works, Huntington, W. Va., is considering the erection of two additions to cost about \$35,000.

The Welch Armature Co., Welch, W. Va., manufacturer of electrical products, has awarded a contract to H. A. Lucas, Bluefield, W. Va., for a three-story and basement plant, 63 x 65 ft., to cost about \$25,000.

## Cincinnati

CINCINNATI, July 5.

While no large inquiries for machine-tools have been received the past week, local manufacturers state that orders for one and two machines continues fairly good. A number of propositions, including the equipment of a plant for the manufacture of motor car axles, which would require about \$60,000 worth of tools, are being held up on account of tight money conditions. Manufacturers in a position to make fairly early deliveries on machine tools report that business is good in some lines and expect it to continue the remainder of the year. The general opinion, however, is that the machinery market will be quiet for some time. The Chesapeake & Ohio Railroad and the Norfolk & Western are purchasing tools against the lists issued recently, and the Globe-Wernicke Co. is in the market for a number of punch presses. Metal-working plants in central Ohio and Indiana have been buyers during the week. A number of crane inquiries are before the trade, principally from Kentucky, and the indications are that business in this line will continue brisk. The Cincinnati Iron & Steel Co. has purchased a monorail crane, making a total of four within the past few weeks.

The McFadden Foundry & Machine Co., Columbiana, Ohio, has been incorporated with a capitalization of \$100,000 by M. L. McFadden, W. A. Lyder, H. W. Forney, W. C. McCord and A. F. Poulton.

The Vapo Stove Co., Lima, Ohio, has been incorporated with a capitalization of \$500,000 by F. B. Williams, E. D. Welch, W. Meyers, H. C. Graham and F. H. Schulenberg. The company will engage in the manufacture of stoves and it is understood that a factory will be erected.

The Seybold Machine Co., Dayton, Ohio, has been authorized to decrease its capitalization from \$1,000,000 to \$500,000.

The Precision Truing Machine & Tool Co., 407 Madison Avenue, Covington, Ky., will increase its capitalization from \$4,000 to \$20,000. It manufactures a truing device for grinding wheels and the additional capital is to take care of increased business.

The Cincinnati Tool Co., Cincinnati, will build an addition to its plant on Waverly Avenue, Norwood, and bids are being taken by Kruckemeyer & Strong, architects. It will be one story, 50 x 146 ft.

The Burroughs Adding Machine Co., Detroit, will establish a branch factory in Tiffin, Ohio. A site has been secured and a building containing about 50,000 ft. of floor space will be erected at a cost of \$150,000. Work will commence immediately and the plant is expected to be in operation in six months.

At a meeting of the stockholders of the Ohio Valley Foundry Co., Marietta, Ohio, held recently, the company was reorganized as the Marietta Foundry & Machine Co. C. W. Suder is president.

## Cleveland

CLEVELAND, July 5.

There is little activity in the local machine tool market although some reports indicate an improvement in inquiry, compared with the past few weeks. Sales are confined almost wholly to single machines for early delivery and to the smaller types. One manufacturer reports some good business in prospect which is expected to develop into orders within a few days. Dealers are looking for a more active demand from railroads shortly, but at present very little business is coming from this source. Cleveland dealers are still having difficulty in making shipments to buyers in this district. While carload shipments are coming through from manufacturers with fair promptness, railroads are very slow in accepting outgoing shipments in less than carload lots.

The Republic Tool & Mfg. Co., Cleveland, has purchased a 3½-acre site at Harvard Avenue and Independence Road on which it plans to commence the erection of works next fall, providing 40,000 to 60,000 sq. ft. of floor space. It will be used for manufacturing stampings and tire building equipment, including cores and mandrels. Some machine tool equipment will be required. In addition to conducting a manufacturing plant the company will branch out into the steel jobbing business and will establish a steel warehouse in which will be carried a large line of steel products.

The Cleveland Can Co., Cleveland, recently incorporated with a capital stock of \$2,500,000, has acquired a site in the southern section of the city near East Forty-ninth Street, on which it will erect works, plans for which will not be prepared for several weeks. The officers are Walter F. Findley, president; J. A. Brown, vice-president and general manager; H. C. Koontz, secretary and treasurer. The first

The Cornell Wood Products Co., Cornell, Wis., has awarded the general contract to W. E. Ule, Stevens Point, Wis., for a two-story machine shop, 44x320 ft., and a one-story finishing room, 88x385 ft., costing about \$250,000. The architect and engineer is L. A. DeGuere, Grand Rapids, Wis. R. P. Pierce is general manager.

The Milwaukee Coke & Gas Co., 425 East Water Street, Milwaukee, has plans for a \$75,000 boiler house addition for its producer plant at the foot of Greenfield Avenue. J. P. McGuigan is chief purchasing agent.

The E. G. Hodger Co., Milwaukee, has been incorporated with a capital stock of \$150,000 to manufacture motor vehicles, motors, automotive parts and other mechanical devices. The incorporators are E. G. Hodger, O. F. Breslauer, Hugo Schattschneider and F. J. Chlupp, 33 Kenwood Avenue, Wauwatosa, Wis.

## The Gulf States

BIRMINGHAM, July 5.

The Alamo Iron Works, San Antonio, Tex., has completed plans for the erection of a one-story machine shop, 90 x 160 ft., to cost about \$30,000.

The Giant Battery Co., 331 Commercial Bank Building, Houston, Tex., recently incorporated, will equip a building at once for the manufacture of electric storage batteries, including separators and other parts. C. C. Rouse is president and L. S. Holmes, manager.

The South Texas Implement & Vehicle Co., Houston, Tex., manufacturer of farm implements, etc., has increased its capital from \$100,000 to \$150,000.

The Limbaugh Machine Co., Jacksonville, Fla., recently incorporated, is planning for the erection of new machine works, 30 x 75 ft. R. W. Limbaugh is president and manager.

The Vulcan Iron Works, Galveston, Tex., has acquired a two-story building in the vicinity of its plant to be used for extensions. It will be remodeled and machinery for general machine repair work and marine repair operations will be installed.

The Western Welding Mfg. Co., El Paso, Tex., has been incorporated with a capital of \$10,000 by M. A. and J. W. Crowder, and L. B. Thompson, to manufacture welding equipment, etc.

The Fort Worth & Denver City Railway, Denver, Colo., is planning for the erection of additions to a number of its shops in Texas. At Fort Worth the shops will be enlarged and about \$50,000 expended for new equipment. The shops at Wichita Falls and Childress, Tex., will also be extended and machinery installed. A new 90 ft. turntable will also be constructed. R. C. Gowdy is chief engineer, with headquarters at Denver.

## The Central South

ST. LOUIS, July 5.

The Woods-Evertz Stove Co., Springfield, Mo., manufacturer of stoves, ranges, etc., is planning for new works to cost about \$200,000. It has acquired about five acres as a site.

The Kansas City Light & Power Co., Fifteenth Street and Grand Avenue, Kansas City, Mo., will build a two-story and basement power plant at Third and Lydia avenues, to cost about \$50,000.

The Porter Mining Co., Ashland, Ky., recently organized, is planning for the construction of a new steel tipple. S. S. Porter is treasurer and general manager.

The Gowen Gin & Mill Co., Gowen, Okla., recently organized, is planning for the immediate establishment of a new cotton ginning plant, to consist of three buildings, 30 x 60 ft., 20 x 40 ft. and 20 x 30 ft. E. C. Edmonds, Wilburton, Okla., is president, and G. R. Burroughs, general manager.

The Surety Tire & Rubber Co., St. Louis, will erect a new plant for the manufacture of cord tires. It has a four-acre site for the proposed works. William L. Burgess is president.

The Automatic Light Switch Co., Louisville, has been incorporated with a capital of \$50,000 by J. W. Roberts, J. I. Pickrell and W. L. Scott, to manufacture electrical switches and other kindred specialties.

The Elkhorn Jr. Coal Co., Millstone, Ky., is planning for the construction of a new tipple at its properties.

The Perfect Steam Sterilizer Co., Louisville, has been incorporated by H. O. Wieland, W. E. Crutcher and J. C. Russell with a capital stock of \$300,000 to manufacture

steam sterilizers. The company will at first do an assembling business and will erect a plant later.

The Louisville Aluminum & Brass Foundry has been incorporated with a capital of \$60,000 by William O. Bonnie, Jr., Elmore Sherman and E. E. Kirwan to manufacture aluminum and brass products.

Charles F. Huhlein, president B. F. Avery & Sons, implement manufacturers, Louisville, denies reports of a proposed merger with the Avery Co., Peoria, Ill., stating that his company manufactures plows in connection with tractors put out by the Peoria concern, but that there is no contemplated merger plans.

## Canada

TORONTO, July 5.

There is a good demand throughout Canada for machinery and machine tools. Some dealers, however, state that inquiries are not as numerous as a few weeks ago and give as one reason the high prices which manufacturers are asking for their commodities. It is noted that only those urgently in need of equipment are sending out inquiries. The delay to which deliveries are subject is also holding up business, especially where an American tool is required. Canada is experiencing one of the heaviest building seasons of its history. Many industrial plants and foundries are under construction and while some have issued lists for equipment, dealers are looking to others to make known their requirements in the near future. The high prices for new tools is having a tendency to increase the demand for second-hand and rebuilt equipment, for which dealers report considerable activity. British manufacturers of machinery, especially small tools, are making a strong bid to regain their hold in the Canadian market and in most cases their prices are much lower than either the Canadian or American products. During the past week several large shipments of British tools arrived in this country, which will be disposed of at prices below those quoted by Canadian and American goods. If American manufacturers wish to retain their hold in the Canadian market they will have to give more attention to business here and also make better deliveries.

Beatty Brothers, Ltd., Fergus, Ont., recently increased its capital stock from \$750,000 to \$2,000,000 to take care of enlargements. An extension to the plant at Fergus is being erected, which will give it an additional floor space of 56,000 ft., and the wood-working plant at Grand River will be enlarged to give an additional space of 20,000 ft. A few months ago the company began the purchase of metal and wood-working equipment, but has not completed its list. It is also adding to its steam power units in connection with the plants and requires two boilers, with steam boiler feed and vacuum pumps.

H. W. Petrie, Ltd., 131 Front Street West, Toronto, Ont., is in the market for a 15 to 20-ton locomotive crane, 8 wheel, M.C.B., suitable for handling clamshell bucket, 50-ft. boom, also one 15-ton locomotive crane, 8 wheel, 35-ft. boom.

Sarnia, Ont., is in the market for two 300-hp. induction motors, coal handling equipment and other material. J. D. Stewart is city clerk and Herbert Sanders is chairman of the Waterworks Committee.

Grinnell & Co., 2420 Dundas Street West, Toronto, manufacturers of fire extinguishers, have let the general contract to Anglin-Norcross, Ltd., 49 Richmond Street West, Toronto, for a foundry to cost \$280,000.

The Anthes Foundry Co., Jefferson Avenue, Toronto, will erect an addition to cost \$12,000.

Contracts have been awarded in connection with the erection of nine factory buildings at Montreal, to cost \$1,250,000 for the Canadian Pacific Railway, Windsor Station.

Thomas McClay, 3036 7th Avenue West, Vancouver, B. C., has the general contract for a wire rope factory and transformer building costing \$25,000 for Gibson's, Ltd., 101 Water Street, Vancouver, B. C.

The Dolly Varden Mining Co., Alice Arm, B. C., has let the general contract to W. V. Hunt, 1652 Eighth Avenue West, Vancouver, B. C., for the construction of a hydroelectric power plant to cost \$65,000.

The Canada Steel Foundries, Ltd., 120 St. James Street, Montreal, Que., has let the general contract to John McGregor, 511 St. Catharine Street West, Montreal, for a power house.

The Canadian Pacific Railway, Moose Jaw, Sask., has let the general contract for a power house costing \$35,000 to T. W. Graham.

The lumber mill at Millerton, N. S., owned by James Robinson, was recently destroyed by fire with a loss of \$100,000. It will probably be replaced immediately and new machinery installed.

# Current Metal Prices

## On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

### Iron and Soft Steel Bars and Shapes

| Bars:                    | Per Lb. |
|--------------------------|---------|
| Refined iron, base price | 5.25c.  |
| Swedish bars, base price | 20.00c. |

### Soft Steel:

|                                    |                  |
|------------------------------------|------------------|
| 3/4 to 1 1/8 in., round and square | 3.52c. to 5.25c. |
| 1 to 6 in. x 3/8 to 1 in.          | 3.52c. to 5.25c. |
| 1 to 6 in. x 1/4 to 5/16           | 3.62c. to 5.25c. |
| Rods—3/8 and 11/16                 | 3.57c. to 5.05c. |
| Bands—1 1/2 to 6 by 3/16 to No. 8  | 4.22c. to 6.50c. |
| Hoops                              | 5.57c. to 6.57c. |

### Shapes:

|                                |                  |
|--------------------------------|------------------|
| Beams and channels—3 to 15 in. | 3.47c. to 5.25c. |
|--------------------------------|------------------|

### Angles:

|   |                  |
|---|------------------|
| 3 in. x 1 1/4 in. and larger              | 3.47c. to 5.25c. |
| 3 in. x 3/16 in. and 1/8 in.              | 3.72c. to 5.60c. |
| 1 1/2 to 2 1/2 in. x 1/8 in.              | 3.52c. to 5.90c. |
| 1 1/2 to 2 1/4 in. x 3/16 in. and thicker | 3.47c. to 5.85c. |
| 1 to 1 1/4 in. x 3/16 in.                 | 3.52c. to 5.90c. |
| 1 to 1 1/4 x 1/8 in.                      | 3.57c. to 5.95c. |
| 7/8 x 7/8 x 1/8 in.                       | 3.62c. to 6.00c. |
| 3/4 x 1/8 in.                             | 3.67c. to 6.05c. |
| 5/8 x 1/8 in.                             | 4.07c. to 6.85c. |
| 1/2 x 3/32 in.                            | 5.17c. to 7.55c. |

### Tees:

|                                       |                  |
|---------------------------------------|------------------|
| 1 x 1/8 in.                           | 3.87c. to 6.25c. |
| 1 1/4 in. x 1 1/4 x 3/16 in.          | 3.77c. to 6.15c. |
| 1 1/2 to 2 1/2 x 3/16 in. and thicker | 3.57c. to 5.95c. |
| 3 in. and larger                      | 3.52c. to 5.30c. |

### Merchant Steel

Per Lb.

|  |                    |
|--|--------------------|
| Tire, 1 1/2 x 1/2 in. and larger                 | 5.00c. to 5.25c.   |
| (Smooth finish, 1 to 2 1/2 x 1/4 in. and larger) | 5.50c.             |
| Toe calk 1/2 x 3/8 in. and larger                | 6.00c.             |
| Cold-rolled strip (soft and quarter hard)        | 12c. to 14c.       |
| Open-hearth spring steel                         | 7.00c. to 10.00c.  |
| Shafting and Screw Stock:                        |                    |
| Rounds   | 6.25c. to 7.00c.   |
| Squares, flats and hex.                          | 6.75c. to 7.50c.   |
| Standard cast steel, base price                  | 15.00c.            |
| Best cast steel                                  | 20.00c. to 24.00c. |
| Extra best cast steel                            | 25.00c. to 30.00c. |

### Tank Plates—Steel

Per Lb.

|                     |                  |
|---------------------|------------------|
| 1/4 in. and heavier | 3.67c. to 5.50c. |
|---------------------|------------------|

### Sheets

#### Blue Annealed

Per Lb.

|        |                  |
|--------|------------------|
| No. 10 | 7.12c. to 8.30c. |
| No. 12 | 7.15c. to 8.35c. |
| No. 14 | 7.22c. to 8.40c. |
| No. 16 | 7.32c. to 8.50c. |

### Box Annealed—Black

| Soft Steel     | Wood's   |
|----------------|----------|
| C.R., One Pass | Refined, |
| per lb.        | per lb.  |

|                |                   |
|----------------|-------------------|
| Nos. 18 to 20  | 8.30c. to 9.90c.  |
| Nos. 22 and 24 | 8.35c. to 9.85c.  |
| No. 26         | 8.40c. to 9.90c.  |
| No. 28         | 8.50c. to 10.00c. |
| No. 30         | 8.60c. to 10.10c. |

No. 28, 36 in. wide, 10c. higher.

### Galvanized

Per Lb.

|                |                    |
|----------------|--------------------|
| No. 14         | 8.75c. to 10.50c.  |
| No. 16         | 9.00c. to 10.75c.  |
| Nos. 18 and 20 | 9.15c. to 10.90c.  |
| Nos. 22 and 24 | 9.30c. to 11.05c.  |
| No. 26         | 9.45c. to 11.20c.  |
| No. 27         | 9.60c. to 11.35c.  |
| No. 28         | 9.75c. to 11.50c.  |
| No. 30         | 10.25c. to 12.00c. |

No. 28, 36 in. wide, 20c. higher.

### Pipe

#### Wrought Iron

Blk. Galv.

|                  |         |                     |         |
|------------------|---------|---------------------|---------|
| 1/2 in. Butt...  | —36 —19 | 3/4-1 1/2 in. Butt. | —5 +15  |
| 3/4-3 in. Butt.  | —40 —24 | 2 in. Lap...        | +1 +19  |
| 3 1/2-6 in. Lap. | —35 —20 | 2 1/2-6 in. Lap.    | —1 +15  |
| 7-12 in. Lap.    | —25 —8  | 7-12 in. Lap.       | +10 +28 |

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

### Steel Wire

| BASE PRICE* ON NO. 9 GAGE AND COARSER | Per lb. |
|---------------------------------------|---------|
| Bright basic                          | 8.00c.  |
| Annealed soft                         | 8.00c.  |
| Galvanized annealed                   | 8.50c.  |
| Coppered basic                        | 8.50c.  |
| Tinned soft Bessemer                  | 10.00c. |

\*Regular extras for lighter gages.

### Brass Sheet, Rod, Tube and Wire

#### BASE PRICE

|                  |                        |
|------------------|------------------------|
| High Brass Sheet | 28 1/4 c. to 29 1/2 c. |
| High Brass Wire  | 28 1/4 c. to 29 1/2 c. |
| Brass Rod        | 26 1/4 c. to 29 c.     |
| Brass Tube       | 42 1/2 c. to 44 1/2 c. |

### Copper Sheets

Sheet copper, hot rolled, 24 oz., 29 1/2 c. per lb. base. Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

### Tin Plates

| Bright Tin | Coke—14x20          |
|------------|---------------------|
| Grade      | Primes Wasters      |
| "AAA"      | 80 lb. 11.80 11.55  |
| Charcoal   | 90 lb. 11.90 11.65  |
| 14x20      | 100 lb. 12.00 11.75 |
| IC...      | \$16.50 \$14.25     |
| IX...      | 18.75 16.25         |
| IXX...     | 20.50 18.00         |
| IXXX...    | 22.25 19.75         |
| IXXXX...   | 23.75 21.50         |

### Terne Plates

|                     |        |
|---------------------|--------|
| 8 lb. Coating 14x20 | \$9.35 |
| 100 lb.             | 9.50   |
| IX                  | 10.50  |
| IX                  | 12.75  |

### Tin

|             |              |
|-------------|--------------|
| Straits pig | 54c.         |
| Bar         | 58c. to 60c. |

### Copper

|              |           |
|--------------|-----------|
| Lake ingot   | 20c.      |
| Electrolytic | 19 1/2 c. |
| Casting      | 19 1/4 c. |

### Spelter and Sheet Zinc

|                               |                     |
|-------------------------------|---------------------|
| Western spelter               | 10c. to 11c.        |
| Sheet zinc, No. 9 base, casks | 14 1/2 c. open 15c. |

### Lead and Solder\*

|                               |                   |
|-------------------------------|-------------------|
| American pig lead             | 10c. to 10 1/2 c. |
| Bar lead                      | 11c. to 12c.      |
| Solder 1/2 and 1/2 guaranteed | 38c.              |
| No. 1 solder                  | 35c.              |
| Refined solder                | 31c.              |

\*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

|                           |      |
|---------------------------|------|
| Best grade, per lb.       | 90c. |
| Commercial grade, per lb. | 50c. |

### Antimony

|         |             |
|---------|-------------|
| Asiatic | 9c. to 10c. |
|---------|-------------|

### Aluminum

|   |              |
|---|--------------|
| No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. | 35c. to 38c. |
|---|--------------|

### Old Metals

There has been more inquiry and a little better sentiment this week with values firmer. Dealers' buying prices are as follows:

|   | Cents per lb. |
|---|---------------|
| Copper, heavy and crucible              | 16.00         |
| Copper, heavy and wire                  | 15.00         |
| Copper, light and bottoms               | 13.00         |
| Brass, heavy                            | 10.00         |
| Brass, light                            | 7.25          |
| Heavy machine composition               | 15.25         |
| No. 1 yellow brass turnings             | 9.50          |
| No. 1 red brass or composition turnings | 12.25         |
| Lead, heavy                             | 7.00          |
| Lead, tea                               | 5.00          |
| Zinc                                    | 5.25          |

two named were formerly associated with the American Can Co. The company's office is at 510 Union Building.

The Euclid Foundry Co., Cleveland, will erect a new plant at St. Clair Avenue and Bliss Road. A. C. Dennison is general manager.

A new plant will be erected in connection with the Akron, Ohio, plant of the Whitman & Barnes Mfg. Co., which was recently merged with J. H. Williams & Co.

The National Fabricating Co., Canton, Ohio, has been incorporated with a capital stock of \$25,000 by H. S. Armstrong and H. H. Rainsberger, and will manufacture motor truck bodies. A temporary plant has been acquired.

The Berger Mfg. Co., Canton, Ohio, will erect two buildings, one 122 x 140 ft. and the other 20 x 158 ft.

The Hoover Suction Sweeper Co., North Canton, Ohio, will build a new power plant. Two 350-hp. water type boilers will be installed.

The Lucius Co., Massillon, Ohio, which recently acquired a site for a new plant, contemplates erecting a five or six-story building, 100 x 200 ft.

The Lima Foundry & Machine Co., Lima, Ohio, is working on plans for a foundry addition.

The Spayd Brothers Foundry & Machine Works, Van Wert, Ohio, is planning an extension to provide additional capacity for the manufacture of stave jointing machines.

The Washington Metal Products Co., Washington Court House, Ohio, has placed a new gray iron foundry in operation. J. D. Boone heads the company.

The Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio, has changed its name to the Vaughn Machinery Co.

## Indianapolis

INDIANAPOLIS, July 5.

The Dailey Automotive Products Corporation, Indianapolis, which plans to increase its stock from \$100,000 to \$1,000,000, is seeking a site for a factory at Muncie, Ind. Arthur L. Dailey is president, I. F. Carpenter, vice-president, and Willis M. Isbell, secretary-treasurer. Tractors will be manufactured.

The plant of the Highland Mfg. Co., manufacturer of electric and gas fixtures, and electric novelties, Muncie, Ind., was destroyed by fire, June 29, with \$200,000 loss. It will be rebuilt. Thomas L. Ryan is president and manager.

The Lavelle Foundry Co., Anderson, Ind., has increased its capital stock from \$25,000 to \$50,000.

The Carroll Castings Co., East Chicago, Ind., has been incorporated with \$250,000 capital stock. The directors are Leo F. Carroll, Hugh E. Carroll and Markwood W. Coursey.

The Sta-Kleen Burner Co., Kokomo, Ind., has been incorporated with \$15,000 capital stock to manufacture oil burners. The directors are Harry F. Tate, A. N. Wilhelm and J. A. Bennell.

The Bedford Tractor Co., Bedford, Ind., recently organized and incorporated with \$200,000 capital stock, has obtained a site for a factory.

The Portland Oil Refining Co., Portland, Ind., has been incorporated with \$200,000 capital stock and will erect a refinery. The directors are Levi Grimes, Wilson Riles, David Abramson, Charles Arbaugh and H. J. McConochy.

The American Sub-Carburetor Co., Portland, Ind., has been incorporated with \$50,000 capital stock to manufacture automobile parts. The directors are Mark M. Moran, James H. Fleming and Lorin O. Miller.

The Mutual Truck Co., Sullivan, Ind., will increase its capital stock to \$5,000,000. Plans have been prepared for an addition to the plant.

## Baltimore

BALTIMORE, July 5.

The Miller Safe Co., Fremont and Briscoe Streets, Baltimore, is having plans prepared for a new plant on Wilkens Avenue, Catharine Street and Millington Lane to form the initial unit of works to occupy the entire site, 322x725 ft. It will be one-story, brick, steel and concrete, with a floor area of about 60,000 sq. ft. The first building is estimated to cost \$350,000, and the complete plant, with equipment, \$1,000,000. The company is a subsidiary of the York Safe & Lock Co., York, Pa., of which S. Forry Laucks is head. J. A. Dempwolf, York, is architect.

The Bethlehem Steel Co., Bethlehem, Pa., will discontinue operations at its shell-loading plant at New Castle, Del. The report that the company would maintain pro-

duction at a smaller status has been denied and it is proposed to offer the plant for sale at once. G. W. Struble is manager of ordnance.

In connection with its new coal pier at Port Covington, Md., the Western Maryland Railroad Co., Baltimore, will install an electrically operated dumper, with capacity of about 40 carloads of coal per hr., or 800 cars per 20 hr. day. Hoisting, conveying and other mechanical equipment will be installed. The new pier will be 74 ft. wide and 792 ft. long, and will replace a structure destroyed by fire. With equipment, it is estimated to cost about \$1,000,000.

The Mountain City Foundry & Machine Works, Greenville, S. C., has increased its capital to \$24,000.

The United States Shipping Board, Washington, D. C., is arranging for the early sale of the plant of Maryland Shipbuilding Co., Sollers Point, Baltimore. The site comprises 51 acres.

The Kingsbury-Samuel Electric Co., 213 North Calvert Street, Baltimore, has acquired a three-story building, 26x110 ft., at 530-32 North Calvert Street, for the establishment of a factory for the manufacture of electrical products, including electrically operated machinery.

The Salem Foundry & Machine Works, Salem, Va., is planning for the erection of a one-story foundry, 70x100 ft.; one-story machine shop, 42x80 ft., and storage building, 32x45 ft. John E. Shank is president.

The Savannah Creosoting Co., Savannah, Ga., will install considerable machinery and equipment at its new works at Port Wentworth, Ga., the estimated cost of the installation being \$500,000. It will include two 50-ton locomotive cranes; switching locomotive, industrial type; pumping machinery, air compressors, steel tanks, steel cylinders, 8x180 ft., etc. F. S. Bishop, Savannah, is treasurer and general manager.

The Blue Ridge Power Co., Spartanburg, S. C., is planning for an addition to its hydroelectric power plant in the vicinity of Saluda to bring the total capacity up to 12,000 hp. W. S. Montgomery is president.

The Rural Farm Power Co., Macon, Ga., has been organized to manufacture electrical equipment for farm service. J. A. Harris and George S. Avant head the company.

The Virginia Polytechnic Institute, Blacksburg, Va., is planning for the erection of a new power plant to cost about \$25,000.

The Southern Supply Co., Calvert and Saratoga Streets, Baltimore, has been incorporated to manufacture plumbing and sanitary fixtures, heating and mill supplies, etc. The incorporators are Edward A. Marshall, Herbert R. Price and George L. Henck.

For the manufacture of gas and electric supplies, the Electric Appliance Co., Frederick, Md., has been incorporated with \$25,000 capital stock by M. A. Pooler, R. Paul Smith and Raymond E. Town.

The Sun Machinery & Iron Works, Inc., 605 East Water Street, Baltimore, has been incorporated with \$25,000 capital stock to manufacture engines, boilers, machinery, etc. The incorporators are Ralf Boe, Harold Johnson and K. Strand.

Plans for the construction of additions are being made by the Salem Foundry & Machine Works, Salem, Va. John E. Shank is president.

The Carolina Steel & Iron Co., Greensboro, N. C., will build a 75x225 ft. addition to cost \$25,000. W. C. Boren is president.

The Mountain City Foundry & Machine Works, Greenville, S. C., has increased its capital stock from \$8,000 to \$24,000.

## California

SAN FRANCISCO, June 29.

The machinery market shows little change. There seems to be considerable uneasiness in buying circles over the tightening of bank credits and many buyers who usually accept the terms offered are asking for deferred payments of from one to six months instead of attempting to get the needed money in the usual way from the banks. Machinery houses which can make immediate deliveries state a good demand exists for their products, but there is a reluctance to place orders for delivery next year or later.

The Nash Motor Co. will build a service station at Van Ness Avenue and Washington Street, San Francisco, at a cost of \$50,000.

Fire damaged the plant of the Coast Metal Works, 1255 Harrison Street, causing a loss of \$75,000.

The Bushnell Mfg. Co., Berkeley, has been incorporated and has taken over the plant and business of the Bushnell Machine Works. It is the intention to make extensions.

The Navonne Mfg. Co., Emeryville, Cal., will build a machine shop and boiler works, and will reclaim rubber, under a secret process.

The Commercial Acetylene Co., Los Angeles, manufacturer of acetylene equipment, has completed plans for a new plant, 50 x 60 ft., at Slauson and Boyle avenues.

The Ever-Ready Heater Co., Los Angeles, has been incorporated with a capital of \$500,000 by John B. Reeves, J. Oscar Smith and W. G. Duff, to manufacture heaters and heating equipment.

A. Siri, North Bush Street, near Webster Street, San Francisco, has awarded a contract to A. Seghieri & Brothers, 35 Cook Street, for a one-story concrete shop on North Bush Street, to cost about \$15,000.

The Charles J. Strangman Co., 137 Rose Street, Los Angeles, has been organized to manufacture metal specialties, sheet metal products, etc. Charles J. Strangman, 3724 South Grand Avenue, heads the company.

H. R. Schulze, 4621 South Wilton Place, Los Angeles, has plans for a one-story machine shop and welding works at 1427 South Hope Street, 50 x 150 ft., to cost about \$13,300.

The Coast Tire & Rubber Co., Syndicate Building, Oakland, manufacturer of automobile tires, will erect a one-story, reinforced-concrete plant at Forty-eighth Avenue and East Tenth to Twelfth streets, to cost \$250,000, including equipment.

The Modern Sheet Metal & Welding Works, 1934 Pasadena Avenue, Los Angeles, has been organized to manufacture sheet metal, iron and other products. H. V. Payne, 2726 Mozart Street, heads the company.

Earl S. Casey, Brawley, Cal., formerly connected with the Holton Power Co., is negotiating with the City Council for the construction of a hydro-electric power plant on the Alamo River. It will consist of three turbines and generating units, with auxiliary operating machinery, and is estimated to cost about \$200,000.

George C. Warner, 651 I Street, Fresno, Cal., has plans for a new one-story machine shop.

J. C. Bannister, 903 North Mariposa Avenue, Los Angeles, has completed plans for a one-story machine shop and foundry at 1901 Hooper Avenue, to cost about \$6,000, exclusive of machinery.

The Angle Shock Absorber Co., 1322 South Grand Avenue, Los Angeles, has been organized to manufacture automobile shock absorbers and similar specialties. H. M. MacLellan, 659 South Union Avenue, heads the company.

Considerable machinery and mechanical equipment will be installed in the new plant of the Western Cordage Co., Los Angeles, on property recently acquired at Long Beach, Cal. It is estimated to cost about \$150,000. S. S. Whitington is vice-president.

The National Carbon Co., Eighth and Brannon streets, San Francisco, has filed plans for its new reinforced-concrete plant on South Brannon Street, to cost about \$360,000, including equipment.

## Milwaukee

MILWAUKEE, July 5.

The demand for machine tools, while not so brisk as earlier in the year, continues of such proportions that all shops are comfortably busy. The general run of business consists entirely of orders for single tools, with here and there two or three machines. Considerable unfilled orders are in hand which absorb a material part of the current output. Makers of milling machines are receiving a satisfactory volume of new business. Inquiry, however, is less active, which is usual at mid-year.

The establishment of a new machine tool industry in Milwaukee is the purpose of the Production Machine Tool Corporation, which has been organized with a capital stock of \$250,000 by Charles Gordon, 1143 Wells Building, chief owner of the firm of Charles Gordon, Inc., jobber in metal-working equipment. Negotiations are under way for the lease or purchase of an existing building. Full announcements of plans are expected about the middle of July.

The Kenosha Foundry Co., Kenosha, Wis., a new \$100,000 corporation, intends to erect a shop costing about \$50,000, to produce a wide range of iron castings. Soil pipe will be the principal product at the outset. The most prominently interested is Ole A. Arneson, president Arneson Foundry Co., manufacturer of brass and aluminum castings, Kenosha. The site adjoins the Arneson shop. Mr. Arneson is president of the new corporation, the other officers being: Vice-president, Frank J. Farnam; secretary, M. J. Werner; treasurer, T. J. Kraft. Work on the new plant will commence shortly after July 15.

The Klinzing Barn Equipment Co., Fond du Lac, Wis., has been incorporated with a capital stock of \$100,000 by J. F. Gruenheck, J. P. Kalt and E. C. Damrow, all of Fond du Lac. It will take over the business of the A. F. Klinzing Mfg. Co., New Holstein, Wis., manufacturer of metal equipment for farm and dairy, and capitalized at \$50,000. A new plant will be erected in Fond du Lac, to be ready about Jan. 1. In the meantime the Klinzing company will continue to operate in its present leased quarters belonging to the John Lauson Mfg. Co. at New Holstein. A. F. Klinzing, founder and president of the company, will be associated with the new corporation as president.

The Sterling Wheelbarrow Co., Milwaukee, manufacturer of wheelbarrows, foundry flasks and other foundry and machine shop specialties, has started work on a one-story brick and steel addition to serve the present foundry and provide additional wood-working capacity, at Sixty-fourth and Pullen avenues, West Allis. It will be 75x110 ft. and cost about \$50,000 with equipment. The general contractors are Klug & Smith, Mack Block.

The Nordberg Mfg. Co., Milwaukee, has increased its authorized capitalization to \$1,250,000 to accommodate the growth of its business and provide additional capacity for the manufacture of steam, oil and gas engines, mining equipment, etc. The works, located at Oklahoma and Chicago avenues, have been in process of enlargement for the last eight months and some further extensions are planned. Christian Scholtka is chief engineer.

The North Wisconsin Hydro-Electric Power Co., Port Wing, Washburn County, Wis., has been organized with a capital stock of \$100,000 and will build a hydroelectric generating plant on Iron River at Orienta Falls. The officers are: President, T. N. Okerstrom; vice-president, O. W. Lundgren; secretary and treasurer, V. E. Okerstrom; directors, John Morrison, Frank Honstrum, D. M. Maxcy, Byron Ripley and T. F. Mackmiller. The Iron River Pulp & Paper Co. also has been organized and will build a mill which will use current from the new power plant.

The United States Tractor & Machinery Co., Menasha, Wis., has increased its capital stock from \$250,000 to \$500,000 to double the output of its plants. Details of improvements are not ready. Joseph G. Sailer is president.

The A. J. Lindemann & Hoverson Co., Milwaukee, manufacturer of stoves and ranges, will build a one-story brick and concrete addition, 60x82 ft., costing \$35,000, with new equipment. The work is in charge of Klug & Smith, consulting engineers, Mack Block.

The Advance Machinery Co., Milwaukee, has been incorporated with a capital stock of \$50,000 to manufacture machinery, tools, and a general line of mechanical devices. The incorporators include E. C. and J. C. Devlin, principals in the Universal Machinery Co., Milwaukee, which recently disposed of its foundry and machine shops to other interests.

The firm of Held & Kendall has been organized at Waukesha, Wis., by Edward Held and Clarence Kendall, and is equipping a shop on Harrison Avenue for general machine repairs by the oxy-acetylene welding and cutting process. All of the equipment has been purchased.

The F. H. Wiese Mfg. Co. of May'owoc, Wis., has been organized with a capital stock of \$250,000 to manufacture wood and metal furniture. It has acquired a building containing 50,000 sq. ft., from the Manitowoc Shipbuilding Co., and is purchasing machinery and other equipment for immediate delivery. Operations are expected to begin by Aug. 1. F. H. Wiese, formerly president and manager of the Kewaunee, Wis., Mfg. Co., is president. Edward Schwab of Two Rivers, and Otto Gass of Manitowoc are associated with him in the enterprise.

The Jacquet Motor Car Co., Belding, Mich., has concluded negotiations with the Association of Commerce of Manitowoc, Wis., providing for the transfer of the plant and offices to that city. The use of an existing building pending the erection of a factory is granted. It builds worm-drive motor trucks. Alfred J. Jackson is president and manager.

The Wheelless Trailer Co., Stanley, Wis., formed six months ago, has incorporated as the Stanley Wheelless Trailer Co. with a capital stock of \$36,000. It has acquired a building which is being remodeled for manufacturing a luggage carrying device for light motor vehicles.

The Board of Education, LaCrosse, Wis., will close bids this week for the erection of a junior high and vocational training school, estimated to cost \$175,000 and designed by Parkinson & Dockendorff, local architects. George P. Bradish is secretary of the board.

A. D. Campbell and J. Harvey Hanks, Waukesha, Wis., are preparing to establish a plant for the manufacture of a patented protecting device for rifle ranges. It is the invention of Capt. J. B. McKenzie, instructor in small arms practice at St. John's Military Academy, Delafield, Wis.

